

News in Brief

The following announcements were made at the AUTOFACT '95 Conference & Exhibition, held last month in Chicago, Ill.

D&B Software Teams Up with Grant Thornton

Dun & Bradstreet Software (Atlanta, Ga.), a supplier of decision support tools, has signed an agreement with Grant Thornton LLP (Chicago, Ill.), an accounting and management consulting firm, naming Grant Thornton its strategic business partner and implementor of D&B Software's SmartStream Manufacturing Distribution. SmartStream is a suite of client/server applications that combine enterprise-wide management, planning and execution support with intelligent tools and technologies for solving real-world business challenges. It combines support for autonomous manufacturing and distribution operations with an ability to configure the desired level of centralized control (see "[Products](#)").

DCT Implements Dassault's DMAPS

DCT Inc. (formerly known as Detroit Center Tool) (Detroit, Mich.), a supplier of welding and assembly systems to automotive manufacturers, has used a new CATIA system to simulate, validate and integrate an automotive robotics welding cell. The cell built by DCT incorporates the Digital Manufacturing Process System (DMAPS) developed by Dassault Systemes (Paris, France), along with a robot and a robot-cell calibration system. DMAPS was originally developed for automobile manufacturer Chrysler Corp. to reduce production lead times by up to 20% (see *Intelligent Manufacturing*, August 1995).

DCT engineers used DMAPS to design and build tooling and robotic spot weld equipment, including a welding gun. DMAPS allows DCT to build the equipment complete with the knowledge of how each component fits into the process flow of manufacturing operations.

With DMAPS, DCT is able to achieve interconnectivity between process design and development; simulation of specific welding cell production runs was first performed in order to assess manufacturability of the sheet metal part. DMAPS presented the manufacturing processes in a consistent way, so that all users on the systems integration team could share the same data. This allowed DCT engineers to "speak the same language" when they shared information. DMAPS' capabilities also include full tolerancing and coordinate measuring machine simulation.

Plynetics Signs Deal with DTM

Plynetics Corp. (San Leandro, Calif.), a provider of rapid prototyping and tooling services, has acquired three Sinterstation 2000 Systems from DTM Corp. (Austin, Tex.). One of DTM's original beta sites, Plynetics will be installing up to five Sinterstation Systems and has increased its manufacturing and tooling floor space to 21,000 square feet.

DTM is the developer of the SLS Selective Laser Sintering process, a technology used to rapidly transform data from 3-D CAD files into 3-D models, prototypes, production patterns, and prototype injection molds and tooling. DTM's RapidTool process can replicate the actual manufacturing process and materials, helping to reduce the product development cycle.

Ford Opens Virtual Reality Lab

Automobile manufacturer Ford Motor Co. (Dearborn, Mich.) has opened a major new facility for developing tools and applications in virtual reality and advanced visual engineering. Ford's new lab will develop tools for a variety of engineering design and evaluation applications, including vehicle packaging studies, design verification and a "walk-up VR station" for designers to evaluate future generations of Ford vehicles.

Ford will use VR software from Division Inc. (Chapel Hill, N.C) for human/vehicle interaction projects. In one project, VR will be used with proposed car dashboard configurations to verify instrument accessibility and driver visibility. In another project, users immersed in a virtual environment can load proposed car trunk designs with virtual luggage to determine the ease of loading a particular trunk configuration and the amount of luggage that will fit under normal conditions.

Ford has been exploring VR since 1991. In addition to using Division's software, Ford will use VR peripherals that include Fakespace's Boom and Push, Ascension's Flock of Birds and Virtual Technologies CyberGlove. The software will run on several Silicon Graphics systems, including two Onyx RealityEngine2 systems and an Indigo2 Extreme workstation.

Deneb Signs Agreement with Geryon

Deneb Robotics Inc. (Auburn Hills, Mich.), a vendor of 3-D simulation and virtual reality software, has signed an agreement with Geryon Communications (Belmont, Calif.), a manufacturer of animation and video output systems for the engineering community, enabling Deneb to resell Geryon's KING dynamic high-speed, on-line video capture system to produce video documentation directly from Deneb simulations for training, marketing and engineering communication. The KING video system includes a scan converter, video deck, playback monitor, and a graphical user software interface so that the system can be operated directly from any of Deneb's simulation software packages using simple macro commands.

Deneb's software users often have the need to document the iterations of their simulations, or to communicate with multiple engineering groups, customers, end users management, and operations personnel. The KING system will enable these users to document their simulations in video and communicate effectively in this format.

HP Forms Manufacturing Unit

Computer supplier Hewlett-Packard Co. (Palo Alto, Calif.) has formed a manufacturing industries focused unit that consolidates various sales, professional services and marketing activities within the Computer System Organization (SCO). The unit will align HP resources into a single organization to better serve customers in the following manufacturing industries: aerospace/defense, automotive, chemical/pharmaceutical, consumer/packaged goods, electronics, heavy equipment, oil & gas, pulp & paper, and semiconductor.

HP is bringing together organizations that were separately focused on the discrete and process manufacturing industry segments. The new manufacturing unit will have responsibility for direct sales and professional services throughout North, Central and South America.

Silma Teams Up with VSA

Silma (Cupertino, Calif.) and Variation Systems Analysis Inc. (VSA) (St. Clair Shores, Mich.) have signed a joint marketing agreement to link Silma's CimStation Inspection software for simulation and off-line programming of coordinate measuring machines (CMMs) with VSA's tolerance analysis software. The companies have developed a direct interface whereby features and tolerances defined in VSA-GDT and VSA-3D can be accessed by CimStation

Inspection. The interface enables joint customers to use a CAD model to identify critical features, points and tolerances on a part that need to be inspected.

Once identified, inspection programs based on those features are created, optimized and downloaded to a CMM. After the program has been run, results are analyzed in CimStation Inspection to compare measured geometry against the nominal model, completing a Total Quality Circuit.

Matra Inks Pacts with Modern Engineering and Nippon Steel

Matra Datavision (Andover, Mass.), a developer of CAD/CAM/CAE solutions, has formed a worldwide strategic alliance with Modern Engineering (Warren, Mich.), a supplier of technical products and systems to the automotive and aircraft industries, which will focus their technological and marketing capabilities on the automotive industry. Areas of collaboration include the development, promotion and implementation of new software products, systems and services for the automotive market.

Matra has also sold over \$1 million worth of its CAS.CADE software products to Nippon Steel Corp. (Tokyo, Japan), one of the world's largest producers of crude steel. Nippon Steel plans to use CAS.CADE as part of an ambitious development program within its Electronics and Information Systems division. This application will facilitate the production of automotive parts, while most future applications will be created for business systems, industrial automation systems and engineering systems. CAS.CADE is an object-oriented, reusable software component environment.

Dassault Signs Four Developer Deals

Dassault Systemes (Paris, France) has signed agreements with four companies, naming them CATIA/CADAM application architecture original software developers. CATIA/CADAM are CAD/CAM/CAE products for design, manufacturing and engineering applications, and are marketed and supported worldwide by computer giant IBM Corp. (Armonk, N.Y.).

GTX Corp. (Phoenix, Ariz.), a supplier of raster editing and conversion software, and Dassault will develop a product family to edit technical drawings and convert them into intelligent parametric 2-D and 3-D CAD/CAM models. Software developed by GTX will be embedded within and made a fully integrated part of CATIA/CADAM solutions.

InSoft Inc. (Mechanicsburg, Pa.), a provider of communications software and development tools, and Dassault will integrate components of InSoft's OpenDVE multimedia collaborative framework and Communique! desktop videoconferencing software into the CATIA/CADAM application architecture. CATIA/CADAM users will be able to share, edit and modify design engineering drawings in real-time, as well as videoconferencing from desktop systems, with team members around the world.

Imageware (Ann Arbor, Mich.), a provider of rapid prototyping software, and Dassault have teamed up to incorporate Imageware's surface reverse engineering technology into the CATIA Shape Design framework. This application will extend the design process chain by allowing users to acquire scanned data of 3-D physical mock-ups from a variety of sensor sources, manage them in CATIA and create high-quality CATIA surfaces.

Brown & Sharpe (North Kingstown, R.I.), a manufacturer of coordinate measuring machines (CMMs), and Dassault will co-develop the next generation of on-line CMM software products. This partnership will also focus on the development of a common, open architecture, STEP CMM interface standard. This standard will speed the use of CATIA systems throughout the field of quality assurance and ensure seamless data transfer from initial prototyping through design, manufacturing, process control and final inspection.

DP Forms Partnership with Bentley Systems

DP Technology (Camarillo, Calif.), a supplier of integrated CAD/CAM systems for discrete manufacturers, has formed a strategic partnership with Bentley Systems Inc. (Exton, Pa.), a supplier of CAD products and services, to develop CAM technologies for Bentley's MicroStation Systems. DP's new CAM component will provide MicroStation users with high performance machining capabilities, and automatic CNC programming and manufacturing technologies.

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GLOBAL INFORMATION CENTER

Standards & Methods

QOS , an advanced approach to TQM (Total Quality Management)

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What is QOS?

QOS or Quality Operating System is an advanced approach to Total Quality Management, one of the milestones in implementing the QS-9000 standard. It had its genesis by virtue of a combined effort of the FORD Motor Company and the principals at Omnex. QOS manages continuous improvement via strategic goals based on the organizational mission, customer expectations and competitive benchmarks. On adopting the QOS implementation technique, the Management of a firm employs Key Performance Measurables to assess critical non-financial and financial results as well as their process-based causes. From then on, the organization moves to cross-functional management as a daily operating discipline. This is a process focused; data based continuous improvement strategy. In the final analysis, QOS creates a distinctive management approach to ensure that business plans 'adopted' will mean, business plans 'implemented'.

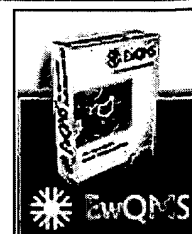
Advantages of QOS

First, QOS takes the framework of 'competitive strategy' meaning, the positioning of the organization to compete in providing specific services to a defined market. It assesses customer expectations and competitive benchmarking, to further establish the quantifiable levels of performance capability required to support the organization's strategic positioning. To some extent, the procedure is comparable to the "Balanced Scorecard"-but QOS/BOS goes further.

In establishing these requirements for strategic positioning, QOS takes into consideration, not only the expectations of service purchasers, but the expectations of, service users, stakeholders, employees, government and regulatory entities as well. As we'll see, QOS/BOS drives data management to the process level, building a cause and effect model for performance, both financial and non-financial.

The QOS/BOS methodology usually involves management in an analysis of processes and their impact on Key Performance Measurables. In many, if not most service organizations, processes are not well defined and are even less well understood in terms of output, their effect on performance, financial & other areas. Least recognized of all, are the internal, systemic causes of variation in process outputs.

A data management system developed on this basis, measuring process variation as compared to the simple cost effects even in traditional accounting/budgeting models, identifies strategically critical process improvement opportunities for the management. The data management

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How to Audit
ISO 9001:2000 -
A handbook for
Auditors
- By Chad Kymal

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system also measures the impact (or lack of impact) of decisions made and actions taken (Graphic-8 panel presentation), validating decisions and targeting opportunities for further improvement.

QOS/BOS provides a business planning methodology which is driven by "The Voice of the Customer", supported by objective data and performance measurement. However, beyond all this, QOS/BOS provides a methodology for managing and monitoring quality systems (ISO/QS-9000) implementation and improvement of strategic requirements, using a cross functional, team approach.

QOS trends

We believe that QOS, Quality Operating System (or, Business Operating System, if you will) developed at Ford Motor Company and deployed throughout Ford and its supply base, manufacturing and service alike, is very effective in enhancing the strategic impact of ISO 9000 systems, by significantly increasing competitive performance in the service environment. It is the system through which quality, cost, delivery and other company-critical performance characteristics are managed.

Central concept

At the heart of the QOS is the Quality Operating System Review, which serves as both Management Review in the ISO context, assessing internal audit data, corrective actions and customer concerns, and Management Review in the context of the business operating system. QOS in this domain, assesses each month, key indicators for cost, quality, service product introduction & development, employee satisfaction, profitability etc. It also evaluates the impact of any action taken to improve these indicators.

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3/9/24 (Item 1 from file: 476)
DIALOG(R) File 476:Financial Times Fulltext
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News: World Trade: Chrysler to construct new plant in Brazil

HAIG SIMONIAN, Motor Industry Correspondent

Financial Times, London Edition 1 ED, P 4

Wednesday, August 21, 1996

DOCUMENT TYPE: Stories; NEWSPAPER JOURNAL CODE: FT LANGUAGE: ENGLISH

RECORD TYPE: FULLTEXT

Word Count: 594

ABSTRACT:

Engineering-Vehicles, Vehicle Components & Assemblers.

TEXT:

Chrysler, the least international of the 'Big Three' US carmakers, took a further step to realise its global ambitions yesterday with a decision to build a new assembly plant in Brazil.

The move, at an undefined site, will reinforce Brazil's growing importance as one of the world's most dynamic vehicle producers and as South America's prime market.

The choice also reflects the impact for foreign carmaker groups of the commercial opportunities presented by the Mercosur free trade zone.

Mercosur groups together Brazil, Argentina, Paraguay and Uruguay.

Chrysler will also expand its Dollars 100m car plant in Argentina, announced last September, to cope with an expected increase in demand. Together, the Brazilian and additional Argentine investments will cost about Dollars 380m.

Chrysler's new Brazilian factory, costing about Dollars 315m, will build the Dakota compact pick-up truck, launched this month in the US. Capacity at the plant, which should start production in 1998, will reach 40,000 units a year, but will start at about 12,000 units in its first year.

The Brazilian plant will be accompanied by a new four-cylinder engine facility, probably in the vicinity, to be built by Detroit Diesel, the US diesel engine group partly owned by Mercedes-Benz. Detroit Diesel's Italian VM Motori subsidiary already supplies Chrysler with diesel engines for its European-built sports utility and multi-purpose vehicles.

The new Detroit Diesel factory, which is expected to *replicate* the modular *manufacturing* processes developed by VM, will initially supply only Chrysler. However, the company expects sales to expand to other vehicle groups and said it might also manufacture heavier-duty five or six cylinder engines for the region's sizeable heavy lorry industry.

In Argentina, Chrysler will add the Jeep Cherokee sports utility model to the Grand Cherokee which should start production at the new Dollars 100m Cordoba plant early next year. Annual output of the two vehicles at Cordoba should start at about 10,000 units and reach 16,000 at full tilt.

The Brazilian and Argentine facilities will help to re-establish Chrysler's growing international manufacturing presence after withdrawing from foreign markets in the 1980s. Foreign sales have climbed steadily since the company re-entered overseas markets in 1987 and amounted to more than 200,000 units last year.

The two plants will consolidate Chrysler's position as one of the world's leading makers of US designed light trucks. These range from utilitarian pick-ups to trendier sports utilities and multi-purpose people carriers.

Light trucks also dominate the company's exports, accounting for about 75 per cent of its foreign sales volume.

Chrysler's Brazilian and Argentine investments represent a vote of confidence in the Brazilian vehicle market and the wider economic benefits of the Mercosur.

'Our decision to manufacture in Brazil and expand production in Argentina is based on the favourable economic conditions and future growth prospects we see in the Mercosur,' said Mr Bob Eaton, Chrysler's chairman.

In spite of continuing concerns about regional economic volatility and the current downturn in some markets, a number of leading vehicle groups have announced new investments in the two countries this year.

Renault is building a plant to make about 120,000 mid-sized Megane models a year, while Mercedes-Benz will build a factory to manufacture about 70,000 small A Class hatchbacks. Honda and Toyota have also announced plans for lower-volume output at new plants.

Separately in Argentina, Fiat and Chrysler are developing new production facilities, while Ford, General Motors and Volkswagen, the region's leading carmakers alongside Fiat, are stepping up output in both countries.

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3/9/37 (Item 1 from file: 748)
DIALOG(R) File 748:Asia/Pac Bus. Jrnl
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TRENDS

PRANJAL SHARMA, DILIP MAITRA, ROSHNI JAYAKAR, GEORGE SKARIA, ALAM SRINIVAS,
SANJIV RANA, RAJEEV DUBEY, M.BHARATI

Business Today, p22

December 07 1999

DOCUMENT TYPE: Journal JOURNAL CODE: INT LANGUAGE: English

RECORD TYPE: Fulltext SECTION HEADING: TRENDS

WORD COUNT: 7,548

TEXT:

EXECUTIVE SUMMARY Ready to Lay Down The Laws Of Reform The talk's over. Now, the promises of the reforms have to be walked into legislation.

Politics upended economics, as the Atal Bihari Vajpayee Administration focused on the Bharatiya Janata Party's (BJP's) problems with the state governments in Uttar Pradesh while the Congress-I fretted over Goa. The Congress-I President, Sonia Gandhi, raised the ruling coalition's hopes by offering full-throated support to the reforms being undertaken by the government, but confounded them by dithering over the Insurance Bill.

Prime Minister Vajpayee rejigged his Cabinet by inducting 2 new Cabinet ministers: Rajnath Singh as Union Surface Transport Minister, and C.P. Thakur as Union Water Resources Minister. Besides, Sukhdev Singh Dhindsa was designated Minister of State for Works & Estates while journalist Arun Shourie was made Minister of State for Planning, Statistics, & Programme Implementation. Nitish Kumar was moved to Agriculture while Pramod Mahajan was given the newly-created Ministry of Information Technology.

Meanwhile, the government kept up its gentle pace of reforms. The Cabinet cleared a Bill to protect geographical indicators, and a Bill to protect plant varieties created in the country. Union Finance Minister Yashwant Sinha promised a Fiscal Profligacy Act in the Winter Session of Parliament to reduce the deficit. The government decided to allow Overseas Corporate Bodies to invest in the secondary market. They can now invest up to 5 per cent of the 24 per cent permitted to Foreign Institutional Investors.

In a crucial decision, the Centre and the states decided to implement a uniform value-added tax regime from April, 2001, to immediately end sales-tax incentives, and implement uniform floor-rates to rationalise the Central sales-tax. This will ensure that the revenue-streams of the states improve even as the confusion over multiple rates across states is sorted out. The pricing of Rs 70 per share of Gas Authority Of India's GDR issue was criticised for being too low by the opposition parties, led by former Finance Minister P. Chidambaram, who accused the government of poor judgement.

The M.B. Athreya panel, set up for creating a strategic vision for the Industrial Development Bank of India, recommended a reduction in the government's stake, and its conversion into a universal bank from a term-lending institution. The government promised to disinvest in 5 public sector banks-Punjab National Bank, Allahabad Bank, Andhra Bank, Indian Overseas Bank, and Punjab & Sind Bank-through Initial Public Offerings of 20-25 per cent of the equity. But its plan to ask the National Thermal Power Corporation (NTPC) to buy the National Hydro Power Corporation for Rs 4,500 crore came in for serious criticism, being interpreted-correctly-as a move to bridge the fiscal deficit at the cost of the NTPC's reserves, which could have been better-utilised in creating more generation capacity. It's high time the Vajpayee Administration disinvested in its plans to milk the PSUs for cash. -Pranjal Sharma

Till M&As Do Us Part Two mega-weddings and two amicable post-divorce settlements marked the start of the holiday season.

It was the season of high-profile visits. *Ford* *Motor* Company's

CEO, Jacques Nasser, came a-calling and kicked off the launch of his company's Ikon. His advice for India? Don't import second-hand cars as it will put a stop to all local development efforts. Another high-profile CEO, British Airways' Lord Colin Marshall, said that the shortage of flying capacity between India and London is hurting investment. Quality guru Eli Goldratt offered his Theory Of Constraints to India's CEOs while Computer Associates' CEO, Charles Wang, explained how his company is growing by making computers talk to each other.

Corporate India's expansionist tendencies were in evidence. In the first-ever virtual acquisition, Satyam Infoway decided to buy 24.50 per cent of the equity of the Net portal Indiaworld for Rs 122.20 crore, with an option to buy the rest for Rs 376.50 crore before June 30, 2000. HDFC Bank decided to take over TimesBank while Dr Reddy's Laboratories acquired control of American Remedies in expectation of increasing demand. Finolex Industries disclosed plans to expand its PVC capacity by more than 50 per cent to 2 lakh tonnes per annum (tpa) from the existing 1.30 lakh tpa. The company is also setting up a captive power plant of 25 mw at a cost of Rs 100 crore. Binani Industries said it will invest Rs 350 crore to increase its zinc-smelting capacity: from the existing 30,000 tpa to 100,000 tpa. Deepak Singhania, the promoter of LML-Piaggio, said that his family will buy out its former joint venture partner Piaggio's 23.60 per cent holding in LML. The State-owned software giant, CMC, tied up with global infotech firms, Oracle and sap, to bolster its ERP package.

At the same time, new ventures are brewing between Indian corporates and foreign partners. American Express formed a joint venture with Tata Finance to expand its foreign exchange operations. Computer Associates, a global software major, joined hands with the Escorts and Pentafour groups to float 2 joint ventures. Also on the reconciliation road, Honda announced that it will not compete with its former partner, the Hero Group. And the Kirloskars pulled out of its joint venture with Toyota, with the latter now focusing on launching its secret vehicle for India. Over to the New Millennium. -Dilip Maitra

The Markets Aren't Y2K Fears of a FII pullout in case the Millennium Bug strikes made the bulls listless. And the bears are sharpening their claws.

All news is no longer good news for the stockmarkets. While the Foreign Institutional Investors (FIIs) were net buyers with Rs 978 crore in November, 1999, after 3 months of net selling, it did not show up on the indices, which moved up only marginally. Trading remained listless, with the BSE Sensex moving in a narrow band between 4,500 and 4,675. Profit-taking continued at higher levels, pulling back the Sensex every time it went up. Volumes on both the National Stock Exchange and the BSE were conspicuous by their weakness.

The infotech sector was the only one to outperform the Sensex. Infosys Technologies' share price touched a new high of Rs 9,000 on both the exchanges, and the market value of the scrip reached Rs 30,391 crore, closing in on the market capitalisation of Reliance Industries, which stood at Rs 33,189 crore. Other software stocks too ruled strong, and basked in the glory of Infosys. But, warns Jigar Shah, 28, an analyst at the securities firm, K.R. Choksey Securities: 'The trend seems inclined towards selective buying of stocks.'

However, the market could get a boost if there is good news on the policy front during the Winter Session of Parliament. Of course, market operators will start building up positions in stocks or warehousing on expectations of selling them to the FIIs. Says S.A. Narayanan, 39, COO, Kotak Mahindra Securities: 'Given the fundamentals of the economy, FII investment is likely to flow in by end-December, 1999.' However, a Y2K-related fiat on the FIIs, asking them not to risk buying Indian stocks in case the Millennium Bug strikes, will hold back the bulls. The overall trend remains bearish, and, in the short term, a rally could be seen as an exit opportunity. That's not bull! -Roshni Jayakar

CORPORATE INDIA Wishlist, Yes. Wishful Thinking? May Be The Chamber has stopped asking for concessions. Perhaps the government should listen now.

Finally, drama supplanted boredom. Annual sessions of the Federation of Indian Chambers of Commerce & Industry (FICCI) have, traditionally, been drab affairs. At the 72nd Annual Session, though, FICCI came of age. It demonstrated a new mindset, aimed at taking the body of largely family businesses into the competitive millennium. Far from seeking concessions, FICCI asked for fundamental changes in the way business is done in the country. Close on the heels of FICCI's announcing that consulting major Arthur Andersen will review and restructure the operations of the apex chamber, its resurgent confidence was also evident in the bold stance that it took on various economic reform measures.

Indeed, FICCI's outgoing President, Sudhir Jalan, set the tone at the Session by presenting a 10-point wish-list to Prime Minister Atal Bihari Vajpayee. The tone was aggressive, even chiding the government for not moving forward on many reforms issues, particularly those pertaining to labour laws and infrastructure. Quite a change for Indian business which, during the early years of the reforms programme in the early 1990s, had steadfastly blocked moves towards an exit policy and labour law changes. Says Jalan, 55: 'We need to embark on the path of reforming our archaic labour laws in tune with the times.' His solution: permit companies to replace 5 per cent of the non-performing human resources with better and skilled resources.

Additionally, the infrastructure sector, in general, and the power sector, in particular, came in for scathing attack. FICCI's demand: both the distribution and the transmission of power should be privatised immediately. The Federation also called for a statutory ceiling on government borrowings and a moratorium on fresh subsidies, switchover to a value-added tax system, and immediate completion of the restructuring of the Central excise. The wish-list was rounded off with a demand for a complete and unambiguous implementation of the disinvestment programme for public sector banks and PSUs.

Also put on the priority-list was the Expenditure Management Reforms Commission. FICCI also called for consensus among the government and the main Opposition parties so that at least major economic Bills-particularly those related to insurance, Intellectual Property Rights, the Foreign Exchange Management Act, Money Laundering, and the Companies Act-are passed. There were some other demands, including one for a total revamp of the Essential Commodities Act, a reduction in the cost of exports as a major export incentive, and a second green revolution in the areas of grain and cash crops through agri-business and food-processing.

The new FICCI President, G.P. Goenka, 59, summed up the future: 'Special attention should be paid by the government, through policies, to the development of sunrise industries like infotech, knowledge-based industries, speciality chemicals, and bio-technology.' Will FICCI's fix-it formula be the one that Team Vajpayee adopts? -George Skaria

Dreams Give Way To Realism Finally, the government warned of tough measures instead of doling out promises.

It was a much wiser government that addressed business at the Annual General Meeting of the Federation of Indian Chambers of Commerce & Industry (FICCI). Gone were the till-death-do-us-part speeches. There were no grand promises of supporting corporates, reducing taxes, and giving more incentives. Instead, Prime Minister Atal Bihari Vajpayee's A-Team-Union Finance Minister Yashwant Sinha, Union Home Minister L.K. Advani, and Union Information & Broadcasting Minister Arun Jaitley-offered a rather realistic picture of what business could expect from the government in the New Millennium.

In fact, the real surprise was the Prime Minister's effort to not gloss over some of the worrying economic factors. Vajpayee dwelt on the fiscal situation, particularly that of the states, the policy pulls and pressures in the telecom sector, and the problems relating to the implementation of the ISP policy. He followed that with promises of action, and announced the formation of a high-level committee to sort out the policy issues on telecom and ISPs under Sinha's chairmanship.

Said Vajpayee, 73: 'I am convinced that faster growth required to reach the target of 7-8 per cent will be possible only with the faster pace

of reforms.' ' Sure. As Y.C. Deveshwar, 52, CEO, ITC, reminded everyone: 'The problems that Indian economy will face in the next millennium are of a Herculean nature. Simultaneously needed is the speedy implementation of the reforms programme.'

On his part, Sinha was in no mood to make any promises, and gave a realistic picture of what would be possible by Budget 2000 given the tough economic situation. High on the agenda is a series of fiscal measures. Said Sinha, 62: 'The high interest rate is a matter of concern as we are aware of the debilitating effects. We cannot let it hamper Indian industry.' But he was only willing to respond to the demand for a value-added tax regime by promising that the sales tax in the states would be overhauled to create just 4 slabs. Sinha also hinted that the various sales tax concessions given by state governments may be capitalised and given to companies as a subsidy.

If the ministerial utterances in the run-up to Budget 2000 are any indication, hard-headed pragmatism is here to stay within the government. With its political position stronger than ever before, the Vajpayee Administration will have no better opportunity to accelerate the reforms process. So, FICCI must be hoping that the government doesn't prove to be fickle again when it comes to delivering on its promises. -George Skaria

HEARD ON THE HILL

Union Commerce and Industry Minister Murasoli Maran is re-thinking the policy for transnational tobacco companies. Although 100 per cent foreign investment is allowed, permission is still given on a case-by-case basis. The new policy could mean that companies like Philip Morris, which had put in applications expecting the Foreign Investment Promotion Board's (FIPB) green signal, will see their proposals being reviewed afresh. Earlier, as the Union Industry Minister in the United Front Government, Maran had opposed proposals by BAT industries for a similar fully-owned subsidiary.

Union Defence Ministry has taken a policy decision to procure certain equipment from India so that the dependence on imports is reduced. Products like bullet-proof vests, snow boots, and other front-line-related equipment will now be sourced from within the country. The Ministry has contacted at least 20 Indian vendors in this field to develop the technology and make the products for the defence forces.

In the debate over the restructuring of the oil companies, it appears that the Prime Minister's Office and N.K. Singh, Secretary, PMO, will, probably, end up having the last laugh. Singh is against the simple cross-holding pattern suggested by former finance secretary Vijay Kelkar, and prefers either strategic sales or complete mergers rather than half-hearted equity swaps. -George Skaria & Alam srinivas

THE BT-MDRA CEO MONITOR

Confidence is in the air. Despite the continued threat of the yawning fiscal deficit and the indifferent tone of the bourses, India Inc. is certain of the National Democratic Alliance's (NDA) ability to make both ends meet. Perhaps it has something to do with the way the Vajpayee Administration prepared for the WTO talks in Seattle, betraying a strong note of pragmatism. If the government is able to pass crucial economic Bills in the Winter Session of Parliament, the index could be headed for the Confidence Zone. Since the Congress-I has put on record its promise to support the reforms, that seems a distinct possibility. With political uncertainty conspicuous by its absence, how far can boom-time be?

INVESTMENT Bangalore Tries To Delete Hyderabad But the badly-managed expo shows why it is falling behind in the race for info-dollars.

It was a complex show alright-a manifestation of Bangalore's Hyderabad Complex. With the capital of Andhra Pradesh topping the destination-list of infotech investment over the past 2 years, Bangalore has been smarting. But a new government, led by the IBM-compatible Chief Minister S.M. Krishna, in Karnataka means that Bangalore is ready to give the new kid on the motherboard a run for its money.

So, IT.Com-ostensibly an industry trade show-at the Electronics City at Bangalore was a major initiative by the Karnataka government to counter the Chandrababu Naidu juggernaut. On the first day of the show, Krishna presented a string of incentives to infotech companies, including 100 per

cent exemption on sales and entry-tax for companies involved in the manufacturing and trading of infotech-related products. A Chief Minister's taskforce was set up, with Infosys Technologies Chairman N.R. Narayana Murthy designated as its head. Cyber-parks will be set up in Mysore, Hubli, and Mangalore to act as incubation units.

A separate department of infotech is also being set up to promote rapid e-governance in the state, and to ensure the continued flow of infotech investments. A hint of sales-tax exemption on all e-commerce transactions was dropped too. The emphasis, clearly, was on the state's commitment to being the infotech capital of the country. However, offering incentives is not enough to bring in investments. And IT.Com proved as much.

For, it highlighted skills the good intentions, but the poor implementation of the Karnataka Government. Lack of planning and adequate infrastructure for an event of such dimensions undermined the entire effort. The event was a big one: there were more than 300 companies, and the number of business visitors was estimated at 50,000. In terms of management, however, it left a lot to be desired. Power proved to be a problem and, at times, rendered ineffectual the endeavour of companies to showcase their hi-tech equipment. Why, participants did not even have access to an accurate events schedule.

Of the 9 pavilions, the one that generated the maximum excitement was that of Linux. In fact, the Linux user-group had arranged tutorials every day in the pavilion. The growing popularity of this operating system, which is giving Windows a run for its money, is also evident from the fact that some Indian companies have started developing Linux-based products. The Bangalore-based Peacock Solutions, for instance, has created a Geographic Information System based on Linux. Also competing for attention was Texas Instruments' solution for Internet telephony.

Although the exhibition was, on the whole, impressive, the seminars were lacking in terms of content, and were not well-attended. Also, there was no convention centre of international standards. This problem might be addressed soon as the Chief Minister announced the allocation of 35 acres next to Electronics City for building a new convention centre.

The comeback bid may not have been ideal, but Bangalore's infotech community is happy that, after years of neglect, developing the industry is, once again, on the priority-list of the government. As Infosys Technologies' Managing Director and coo, Nandan Nilekani, 43, said: 'Bangalore is-and always will be-the Silicon Valley of India.' Bangalore had better not bank on that. -Sanjiv Rana

IT.COM PARTICIPANTS

Adeptek Software Aptech Asset International Bea System CitiBank Citi Home Shelter City Two Thousand Computer Multimedia CMOS Software Comat Technologies Compaq Computers Compuwave Interactive DACP Dell Asia Pacific DSQ Software Dynam International E-Capital Solutions E-Infochips Fusion Software IBM Impact Solutions Infiniti Infotech Infosys Technologies Ibond India Kanika Infotech Kaashyap Radiant Systems Kemefs E-solutions LG Soft India Manipal Control Data NIIT Net Point Ras Infotech Robert Bosch Sonata Software Satyam Software SEEC Technologies Tulika Write Up Vibrant Technologies Web Tek Software Winfoware Technologies

SANJOY DAS GUPTA, Secretary (Infotech), Karnataka Government 'WE WANT TO CREATE A WORLD CLASS IMAGE'

Sanjoy Das Gupta, 44, Secretary (Infotech), Government of Karnataka, explained the importance of IT.Com to Karnataka.

ON KARNATAKA'S COME-BACK GAMBIT. The Government of Karnataka has taken a policy decision to hold an annual infotech exhibition, starting each year on November 1. This is being done with the hope of slowly creating a world-class image for Karnataka.

ON HOW IT.COM WAS DIFFERENT. First of all, IT.Com 99 is the largest infotech exhibition being held in Asia, which puts it high on the list of global infotech events. The participation of the US as a partner country this year and the business delegations from Taiwan, Singapore, and Japan were affirmation of the faith of the international community in Karnataka's potential as the infotech destination of the future.

ON THE HIGH POINT OF THE SHOW. The tremendous response that was received for the Linux pavilion was a pleasant outcome of the exhibition. The other happy outcome was the great success and popularity of the concept of the Computarium, which is an interactive medium for school children. It is a thematic display of technology in a computer-generated environment, taking children through an interactive ride in time into the future. It was popular with children as well as adults. -Sanjiv Rana

INFOCORPS Logging Out Of IT.Com The hottest infotech companies were missing from the show.

Even Bangalore's own didn't log in to IT.Com. And the absence of some of the marquee names on the city's infotech map from the fair was a pointer to the city's decline among the digirati.

Sure, many of India's top infocorps, like Compaq, Intel, Texas Instrument, dell, Microsoft, and IBM, were present, but Wipro was the most conspicuous absentee. This was more surprising because Wipro's CEO, Azim Premji, is a member of the Chief Minister's Infotech Task Force. Likewise, in the ERP pavilion, top ERP vendors like Baan and sap were not present. NASSCOM, the software industry body, was not visible either. Says Dewang Mehta, 38, the high-profile President of NASSCOM: 'Although there was a NASSCOM representative who had presented a paper, I personally did not go there as IT.Com is more of an exhibition than a conference.'

Even a year ago, IT.Com was a glittering showcase of cutting-edge developments in infotech. But, with competing events like NASSCOM 99 and India Internet World stealing the show, the event will have to reboot itself to bring back the infostars. -sanjiv rana

THE 100 DAYS REFORMS REALITY CHECK

RBI RELAXES ECB GUIDELINES Relaxing the repayment norms for ECBs further, the RBI has allowed corporates to repay foreign loans on the basis of a single approval

MORE FREEDOM FOR OCBs The government has decided to allow Overseas Corporate Bodies to invest in the country's secondary market

SBI TO ENTER INSURANCE The State Bank of India has been permitted to enter the insurance sector through equity participation

STATES END SALES TAX WAR The Centre and states have signed a pact to introduce a single Value-Added Tax from April, 2001, and remove differential rates

PRASAR BHARTI ACT CHANGE PUT OFF The GOI has decided not to amend the Prasar Bharti Act until its policy for state broadcasters is finalised

RAILWAYS CANCELS FREIGHT HIKE The Railways have withdrawn the special freight hike imposed on washed coal moved from collieries to power houses and steel plants

SUGAR ORDER TO BE IMPLEMENTED The GOI will implement the Sugar Control (Amendment) Order, 1999, to enforce the monthly release and the stocking limit, and to check prices

NEW BODY FOR SICK SSIs The GOI will set up a separate BIFR-type body for tackling cases of sickness in the small-scale industry

PORT EQUITY TO BE LOCKED IN The GOI has stipulated that the main partner in a consortium developing a private port must lock in its equity for the entire 30-year concession period

SINHA TO HEAD PANEL ON TELECOM Union Finance Minister Yashwant Sinha will head a group to solve the problems of regulation and pricing in the telecom sector

IA CANNOT FLY TO EUROPE The Civil Aviation Ministry has decided not to allow Indian Airlines to fly to European destinations vacated by Air India

OVERSEAS INVESTMENT LIMIT TO RISE The GOI plans to raise the ceiling for overseas acquisition from the current level of \$25 million for companies listed abroad

ANTI-DUMPING DUTY ON SODA ASH The Commerce Ministry plans provisional anti-dumping duty on imports of soda ash from China following investigations

ECONOMY How Wide Is My Deficit? Finance Minister Yashwant Sinha admitted he's worried stiff. That's a start.

28022000 loomed large over the Economic Editors' Conference, 1999-that ritualistic annual interface between North Block and the business Press.

Fifteen weeks shy of B-Day 2000, the fiscal fitness of the economy, as anticipated by Union Finance Minister Yashwant Sinha, was the key issue. Where will the fiscal deficit stand when the books are closed? At 4 per cent of GDP, which Sinha has been promising, or 5.50 per cent, which the critics think it will be?

The answer is not too difficult to find. The difference of 1.5 percentage points amounts to an additional figure of Rs 20,000 crore. While Rs 10,000 crore is slated to come in from disinvestment, there is little chance of this target being met. Thus, once again, the fiscal deficit remains the key problem for the government.

Related to it are several aspects of the economy which, if tackled, could put growth into overdrive. Reducing the fiscal deficit by cutting costs would imply a smaller government, a reduced wage-bill, and less red tape. Generating more revenues would entail a radical sell-off of state-run companies in areas where the private sector is strong and confident, as well as widening and deepening the tax-base with efficient retrieval systems. A lower deficit would, thus, mean falling interest rates, reducing borrowing costs for corporates, and, therefore, better profits.

'Attacking the fiscal deficit is not a sin,' thundered Sinha when badgered about the yawning gap. So is running out of options. Earlier this year, the government had resorted to cross-holding of equity between PSUs to raise money while the plan to make NTPC buy NHPC displays desperation-not innovation.

To be fair, the government is planning to introduce a series of measures, including zero-based budgeting and a Fiscal Responsibility Act, to keep expenditure in check. The Act will make it mandatory for the government to take Parliament's approval for exceeding the prescribed fiscal limits. This could help scale back spending.

Sinha indicated that among the other measures he is considering is a reduction in interest-rates by lowering the small-savings rate. High small-savings rates force the Centre to lend at higher rates to India Inc.. Is that the real solution? No. And Sinha knew he couldn't convince the cynical business Press that his government has the political wherewithal to kill the deficit. Ultimately, the deficit generated a credibility gap.

-Pranjal Sharma

DISINVESTMENT Passing The Privatisation Buck The government refused to reveal who'll really be in charge of PSU sell-offs.

The Vajpayee Administration may have decided that disinvestment is the cure for its fiscal ills, but it offered no clue to who is in charge. While, in most countries, the privatisation process is implemented by an independent body, there is still no such mechanism in India.

So, the Economic Editors' Conference saw committed buck-passing on just who would handle the momentous task of raising Rs 10,000 crore for the government this year-and on who would take disinvestment to its logical conclusion of PSU privatisation. Finance Ministry officials were at pains to point out that a 'well-established procedure already exists.' But what they did not admit is that the process is being overseen by a Core Group of Secretaries, for whom disinvestment is just one of the items on the agenda. How can it be expected to focus on privatisation alone?

In any case, expecting a ministry to relinquish control is self-contradictory. True, the government has set up a Cabinet Committee on Disinvestment. But this authority is only meant to give the final go-ahead to the sale; the nitty-gritty should be left to a professional body. The Disinvestment Commission had been created solely for the purpose of recommending the mode of disinvestment and its implementation. However, with its term coming to an end, there is still no news about who or what will replace it.

Union Finance Secretary, P.G. Mankad, said that the decision to renew the term of the Commission-or not-will be taken by the Union Minister for Heavy Industry and Public Enterprises, Manohar Joshi. Joshi, on his part, said that his decision will depend on what the prime minister wants. At the end of 3 days, the participants at the Conference were none the wiser about the method of disinvestment. With such an attitude prevailing, don't expect PSU reforms to be completed in a hurry. -Pranjal Sharma

POWER Short-circuited By L'affaire NTPC-NHPC

It was history-turned-farce in the making. The Vajpayee Administration's decision to ask the National Thermal Power Corporation to buy the National Hydro Power Corporation turned out to be too hot for the government to defend at the Economic Editors' Conference. While the decision was cleared by the Prime Minister, it was Union Power Minister Rangarajan Kumaramangalam who had to face the flak.

Business writers, who rarely agree on any issue, virtually ganged up against Kumaramangalam. As a result, he had to field more than a dozen questions on the deal. His office had prepared a paper which outlined the technical and economic synergies between the 2 companies. It sought to show that power sector PSUs would benefit from the decision. But nobody was taken in. When a scribe suggested that the fiscal deficit, and not power-sector problems, had sparked the decision, the pressure mounted on the minister.

Another editor said that the Minister was attempting post-decision rationalisation. Irrked, Kumaramangalam shot back: 'Just because I am a politician, it does not mean I have mental aberrations. My IQ is not minus 500.' However, he is believed to have admitted to some delegates that the decision was imposed on him. For the Vajpayee Administration, this was a warning. Solving the fiscal mess may be a priority, but ill-conceived sales of PSUs will not go completely unchallenged. -Pranjal Sharma

TQM Taking Roots In Corporate India Companies outside the auto industry too start reporting gains from the Q-movement.

TQM drives India Inc.'s cars. But has the quality movement really spread beyond the auto industry? Finally, the Confederation of Indian Industry's (CII) Seventh Quality Summit showed signs of TQM percolating to other sectors, including consumer goods and infotech. As the corporate cases showcased at the Summit reveals, the benefits of quality are being seen everywhere. The results of the cluster approach to learning and management propagated by the Japanese Union of Scientists & Engineers (JUSE) was explained to the delegates.

An entire day of the 3-day Quality Summit was devoted to sessions on implementing Daily Work Management (DWM), which is a critical part of TQM, by Maruti Udyog's vendors. Spearheaded by JUSE counsellor, Yoshikazu Tsuda, and Maruti's Director (Engineering), K. Kumar, cluster members presented their quality initiatives under DWM. Says Tsuda: 'DWM is like a self-starting motor. It gives you the measure of quality, cost, and delivery. The cluster companies are doing well in the implementation.'

Earlier, NIIT Chairman R.S. Pawar stole the show on the first day with his company's unique initiative of setting up the MD's Quality Club. It is meant to bring together the brightest brains within the company to think, alongside the managing director, about how to be a TQM corporate. The club sets the agenda at the beginning of the year and, then, implements it through the year, with the objective of building a pool of knowledge and, then, disseminating it across the organisation. Says Pawar, 48: 'It's how one gets to open up people's hearts and minds. It's the inspiration that leaders create to bring about aspiration among followers that is important.'

Godrej-GE Appliances' introduction of the Balanced Scorecard technique also stirred tremendous interest among the audience. The tool leads to a balanced and robust strategic management system which looks beyond mere budgeting and financial accounting. Within a single framework, it focuses on shareholder value, the internal and the external customer, and the learning requirement of the business to create a system of linked objectives to define how the organisational goals can be achieved. It was partly by applying the Balanced Scorecard, said CEO Vijay Krishna, that the company was able wash off a loss of Rs 61 crore in 1996-97 and reported net profits of Rs 21 crore in 1998-99.

Hero Cycles' Managing Director Sunil Kant Munjal credited an 'ear-to-the-ground' approach listening to the customer's voice for his company's transformation from a 3-model company 15 years ago to a 150-model bicycle-manufacturing company. And Sundaram Clayton's Chairman Venu Srinivasan described how to look inwards for reasons of quality-related

problems before globalising. Says Srinivasan, 46: 'We were so far behind global quality standards that we could never hope to export huge numbers.' Srinivasan's company first re-engineered its plant into cells in the early 1990s, and then, worked on developing engineering accuracy and lead-time reduction to reach a level of 20 per cent of sales from exports. Quality shows-on the bottomline. -Rajeev Dubey

ELIYAHU M. GOLDRATT, Manufacturing Guru 'TQM WITHOUT TOC IS BIG TROUBLE'

Eliyahu M. Goldratt, the creator of the Theory of Constraints (TOC), who addressed CEOs at a special workshop at the Seventh Quality Summit, explained how quality fits into his theory.

ON HIS INITIAL OPPOSITION TO TQM. I was concentrating on the things it had not done. I didn't look at the things that it did. And I began to appreciate more to what extent its role in terms to changing the mindset is vital.

ON WHICH COMES FIRST, TQM OR TOC. I don't have a doubt that you have to start with TOC. But this does not make TOC any more or less important than TQM. It's true that if you start with tqm without TOC then you are in big trouble. It takes much longer before you get the results. On the other hand; if TQM is put under the umbrella of TOC, there's zero resistance.

ON TOC BEING A WHAT-AND-WHY, AND NOT A HOW-TO TECHNIQUE. Yes and no. When you want to know how to do something if it has been done already, who wants to reinvent the wheel? But if the how-to was not there, TOC provides a solution. So, in measurements, where the only thing available was cost accounting, I had to go into the nitty gritty of it. But I have not reinvented for the sake of reinventing.

ON HIS STATED OBJECTIVE OF WORKING WITH OVER 1,000 INDIAN COMPANIES. Somehow I feel we are ready for this. Even as recently as a year ago, it took us a minimum of 3 years to implement TOC in a company. That was a constraint. It was only this year that the tools to break up the implementation were developed. Now, we are ready to move on a major scale. We are doing this already in countries like the UK, Estonia, Israel, and the US. Why not India too?

BEST PRACTICES Whose Quality Is It Anyways? CEOs squirmed as the GOI and their peers accused them of not being committed to TQM.

If there was one thing the Quality Summit 99 will be remembered for, it will be honesty and candour. The Vajpayee Administration and India Inc. took gentle jabs at each other. Corporate captains stressed the need for a quality movement in the government.

In his reply, Montek Singh Ahluwalia, 56, Member, Planning Commission, remarked that business never improves on its own. Only the fear of losing customers brings about change. 'Even Bajaj Auto introduced the new versions of 'Hamara Bajaj' only in the post-liberalisation era. More product innovations took place between 1990 and 1995 than in the 1980s,' said Ahluwalia even as Bajaj Auto Chairman Rahul Bajaj squirmed on the dais.

An example of this was soon provided for by the Confederation of Indian Industry's (CII's) Deputy Director-General N. Srinivasan. He lamented the fact that, for the third year running, no corporate was judged worthy to be presented the golden trophy that goes with the CII-ExIm Award for Business Excellence. Scaling the Quality Summit is, obviously, tougher than it looks. -Rajeev Dubey

GLOBALISATION How To Conquer The World Brand gurus offered multiple strategies for taking Indian brands global.

Branding was repositioned at the Confederation of Indian Industry's Brand Summit in Chennai. With globalisation stretching markets and the marketer's purse, the focus was on creating strategies for effective global brand management. BT presents the 6 routes to global branding that emerged from 3 days of brainstorming.

I. OFFER A HIGH LEVEL OF CUSTOMISATION. A brand as an experience calls for high sensitivity to the customer's needs-even discerning to the customer's subtle expressions! Customisation has become imperative as the customer will always find exactly what she needs, whether it's your brand or not. Every global player is trying to develop a brand-image-specific

customer-relation marketing module, which entails customer-emotion evaluation. With growing use of technology and freer cross-border trade, the customer has so much choice now that one-size-fits-all marketers will perish if they don't customise.

II. MANAGE THE VALUE PERCEPTION. The brand transcends every barrier-most of all, class. But it still means different things to different socio-economic groups. And the customer's commitment towards the value of a brand is inversely proportional to her standing on the socio-economic scale. The functional attributes of successful global brands define a brand, but it's the value that the companies manage to yoke to these brands, by exploiting the perception of customers belonging to different socio-economic groups, that, ultimately, makes them work.

III. DON'T EXTEND YOUR BRAND INDISCRIMINATELY. Procter & Gamble, Chevrolet, and Millers & Coors have all been victims of indiscriminate brand-extensions. Levi Strauss' brand-share dropped from 31 to 19 per cent in just 7 years when it came up with 27 different cuts to appeal to a wider market. Diluting the brand equity by getting into sub-branding will only kill sales. For, when there are too many products under the same brandname on the shelf, the customer is not patient. In the US, 90 per cent of brand-extensions die.

IV. LOCALISE GLOBAL BRANDS. *Ford* *Motor*'s response to the Indian market is a pointer. Even as it positioned its new car, the Ikon, in line with Indian needs, it *replicated* its global *manufacturing* technology in all the Indian plants. While it is true that customers of global brands want to enjoy the same quality of product, packaging and communication as is available in the developed markets, even those features must make sense in the local context of consumption.

V. SPEAK IN ONE VOICE. No matter what its product, service, or market, General Electric's communication is universal: We Bring Good Things To Life. The brand communication, even as it uses different media, must be unified. It also needs to have a universal appeal. But implementing such a translation worldwide is a huge task considering that every different global market has its own media and idioms. One way out is media focus. Colt, the UK-based air-conditioning and ventilation company has cut the number of trade publications it advertises in from 32 to just 1.

VI. DON'T NEGLECT THE NUANCES. Everyone knows it by now, but cross-cultural mistakes can still kill your chance of globalisation. When an ad agency created a commercial for an antiperspirant, for airing in Tokyo, featuring an animated lady octopus-referred to as an Underarm Expert-spraying under all her arms while talking about efficiency of the spray, it just drew hysterical laughter from the audience. Why? In Japan, an octopus is thought of as having eight legs-not eight arms. Don't forget, there is no one global market-to conquer the world, you have to conquer every market differently. -M. Bharati

V. BALARAMAN, Chairman, Brand Summit 'YOUR BRANDS MUST SUCCEED AT HOME FIRST'

He was the man behind the Brand Summit. Hindustan Lever veteran V. Balaraman, 53, Chairman, Brand Summit, spoke on critical brand issues on the eve of the New Millennium.

ON CORPORATE BRANDING IN INDIA. Corporate branding is a challenging proposition in India since there are many brands and diversified products from the same company. None of them is able to convey the corporate's ethics and values. The Body Shop is not just selling a product. It is branding environmental concerns by asserting that no animal-testing has been done. The brand content has percolated from the corporate down to the customer, who rewards the brand by showing an affiliation to this value.

ON PRODUCT DIFFERENTIATION. Differentiation is the deal-clincher. And for that, a corporate can make use of sub-branding and customisation of the brand to suit various international markets. Sub-branding won't dilute the corporate brand message. The corporate brand is like a master brand, and sub-brands are merely extensions of this. Hindustan Lever, for instance, has created its strong brand equity through the extensive usage of sub-branding.

ON GLOBAL BRANDING. Before you want to make a mark in the

international market, you have to consolidate your domestic standing. If your brand doesn't sell well in your own home territory, it is preposterous to think that it will be well-received abroad. The Japanese are strong in their domestic market. Success has to be local first, then it should be global, as only this will provide true value to the customer. -M. Bharati

TRADE Trading In Its Original Image The trade fair has become a consumer-products exhibition-not a B2B mart.

It began life as a B2B exhibition. But the India International Trade Fair (IITF) has morphed into the country's biggest B2C event. Visited by 3.50 million people from different strata-businessmen, foreign delegates, and consumer-product buyers, few of whom are targets for business deals-IITF 99 was out-and-out a general exhibition. Says M. Ahmad, 55, CEO, National Small Industries Corporation, which holds the Techmart exhibition alongside the IITF: 'As more of specialised fairs come in, the IITF is becoming a mela. We have taken precautions, and have constructed a separate small-scale exhibition centre in Okhla (Delhi).'

Sure, corporate India got a first-hand view of the latest international technology and products. But, with special industry shows like Auto Expo (automobiles), IMTEX(machine tools), Gartex (garments), and Kisan 2000 (farming machinery and equipment) dotting the landscape, the IITF's focus has shifted to retail displays. Argues Y. Saifullah, 55, Senior General Manager, Indian Trade Promotion Organisation (ITPO): 'You can't focus on business visitors alone. We have allotted time for trade visitors. Promoting trade is crucial, but the common man should also get an opportunity to see what he couldn't normally.'

That, contends the ITPO, is why the entry-fee for the public was always kept low (Re 1 for many years, and now Rs 15 per head). The consumer attractions? It is the only national fair in which the states participate, with each trying to project its products and image. Besides the participation of foreign countries-70 companies from 14 countries participated in the fair-the IITF also attracts foreign delegations who are interested in sourcing technology or products from India.

For B2C sellers, the cost of participation is attractively-low. Specialised fairs are more expensive-Rs 8,000-10,000 per sq. metre of space, compared to the Rs 3,000 per sq. metre charged by the ITPO-and last for fewer days: 4 against the IITF's 10. Says Rajeev Karwal, 36, Senior Vice-President (Consumer Electronics), Philips: 'We look at the IITF to enhance our brand equity, and also to enhance our sales.' Other companies agree: armed with a special sales team, LG Electronics clocked sales of Rs 3.75 crore at IITF 99, with a bill of Rs 75 lakh. Q.E.D.. -Ranju Sarkar

LAUNCHES Consumer Durables Steal The Show Digital products and financing schemes attracted the crowds. Trade? What trade?

It's the domestic marketer's dream come true. The India International Trade Fair (IITF) offered the manufacturers of consumer durables a perfect platform to showcase their products. And the exhibitors made the most of this opportunity by packing in new product launches.

Nearly 5,200 companies-from both the organised and the unorganised sectors-presented their latest offerings at IITF 99. Two themes that emerged clearly this year: digitisation in consumer electronics, and the vending of new products with attractive consumer finance schemes.

Philips, Samsung, and LG Electronics, for instance, displayed-and sold-their current offerings and future digital products, comprising the latest DVD-players, home-theatre systems, MP3-players, HDTVs, Plasma TVs, flat-screen TVs, front-door cooling refrigerators, and refrigerators with a bar, and water and ice-cube dispensers. Says Ravinder Zutshi, 43, Vice-President (Marketing), Samsung: 'Demonstration, exposing products, and positioning them is the key objective at the IITF, so that the dealer's brand-recall is high after the fair.'

Another striking feature of IITF 99 was that most consumer-durable marketers tried to pack their launches with attractive finance schemes, gifts, and special prices to entice the potential customer. This was catalysed by consumer finance players like ICICI and The Associates (formerly Avco Financial Services) offering on-the-spot financing to attract customers. Says Ajay Kapila, 36, Vice-President (Marketing), LG

Electronics: 'We want to facilitate the buying decision this way.' Next year, they should call it IIC-for Customer-f. -Ranju Sarkar

HEALTH BUSINESS Working Out For A Better Future Sports and fitness products carved out a niche amidst the consumer products jungle.

They're cashing in on health. To promote sports and fitness equipment, the Federation of Indian Micro and Small & Medium Enterprises (FISME) organised India's first-ever Sports & Fitness Fair concurrently with the India International Trade Fair 99. Says Anil Bhardwaj, 40, Secretary General, FISME: 'The objective is to promote exports by creating domestic capabilities, both in qualitative and quantitative terms.' The fair was sponsored by the Union Ministry of Commerce & Industry, the Development Commission of Small-Scale Industries (DCSSI), the Sports Goods Export Promotion Council, and the Small Industry Development Bank of India.

India's sports industry, which is centred largely in Meerut and Jalandhar, exports products worth Rs 200 crore-mainly football and cricket gear, and athletic equipment. Now, with health clubs and fitness centres mushrooming in urban India, the demand for health and fitness equipment is growing exponentially. Says Promod Arora, 27, Senior Executive, Benson Sports, a Meerut-based sports equipment-manufacturer: 'We can't go all over India. The fair allowed us to get in touch with potential dealers besides providing publicity for our products.' No wonder, then, the manufacturers didn't mind the bill of between Rs 50,000 and Rs 1 lakh for displaying their products.

Sure, some participants were not happy with the exposure and publicity they received. Says S.K. Agarwal, 40, Marketing Manager, B.D. Mahajan & Sons, a Meerut-based manufacturer of cricket gear: 'We had just 4 or 5 trade enquiries. We were looking forward to getting foreign buyers. That hasn't happened.' Maybe. But then, you can't win a marketing marathon the first time you enter it. -Ranju Sarkar

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COMPANY NAMES (DIALOG GENERATED): Air India ; Allahabad Bank ; Amendment ; American Express ; Andhra Bank ; Annual ; Atal Bihari Vajpayee Administration ; Avco Financial Services ; ANTI DUMPING DUTY ON SODA ASH The Commerce Ministry ; B D Mahajan & Sons ; Bajaj Auto ; Benson Sports ; Binani Industries ; Body Shop ; British Airways ; Cabinet Committee on Disinvestment ; Charles Wang ; Chief Minister ; CitiBank Citi Home Shelter City Two Thousand Computer Multimedia CMOS Software Comat Technologies C ; Commerce & Industry ; Compaq ; Computer Associates ; Confederation of Indian Industry ; Consumer Electronics ; Core Group ; Customer ; Daily Work Management ; Development Commission of Small Scale Industries ; Disinvestment Commission ; Economic Editors 's Conference ; Even Bajaj Auto ; Expenditure Management Reforms Commission ; Federation of Indian Chambers of Commerce & Industry ; Federation of Indian Micro ; Finance Ministry ; Finolex Industries ; *Ford* *Motor* Company ; Foreign Exchange Management ; Foreign Institutional Investors ; FIIs ; FISME ; General Electric ; George Skaria & Alam ; Godrej GE Appliances ; Heavy Industry ; Hero Group ; Hindustan Lever ; Honda ; HDFC Bank ; HEALTH BUSINESS Working Out For A Better Future Sports ; HIS STATED OBJECTIVE OF WORKING WITH OVER 1 000 INDIAN COMPANIES ; India Inc ; Indian Airlines ; Indian Micro ; Indian Overseas Bank ; Industrial Development Bank of India ; Information Technology ; Infosys Technologies ; Infotech Task Force ; IA CANNOT FLY TO EUROPE The Civil Aviation Ministry ; IBM ; ISP ; Japanese Union of Scientists & Engineers ; K R Choksey Securities ; Kotak Mahindra Securities ; LG Electronics ; LG Soft India Manipal Control Data NIIT Net Point Ras Infotech Robert Bosch Sonata Software Satyam ; LML ; M & As Do Us Part Two ; Maruti Udyog ; Member ; Microsoft ; Millers & Coors ; Ministry of Information Technology ; N K Singh ; National Democratic Alliance ; National Hydro Power Corporation ; National Small Industries Corporation ; National Stock Exchange ; National Thermal Power Corporation ; NASSCOM ; NIIT ; Okhla ; Oracle ; Peacock Solutions ; Philip Morris ; Philips ; Planning Commission ; Prime Minister 's Office ; Procter & Gamble ; Public Enterprises ; Punjab & Sind Bank ; Punjab

National Bank ; Reliance Industries ; RAILWAYS CANCELS FREIGHT HIKE The
Railways ; Samsung ; Says S A ; Senior Executive ; Small & Medium
Enterprises ; Small Scale Industries ; Small Industry Development Bank of
India ; Sports & Fitness Fair ; Sports Goods Export Promotion Council ;
Sugar Control ; SBI TO ENTER INSURANCE The State Bank of India ; SINHA TO
; STATES END SALES TAX WAR The Centre ; Tata Finance ; Texas Instruments
; TimesBank ; Toyota ; TQM Taking Roots In Corporate India Companies ;
Union Commerce ; Union Defence Ministry ; Union Information &
Broadcasting Minister ; Union Ministry of Commerce & Industry ; Wipro ;
Works & Estates

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ENVIRONMENT**Lean and Green**

Ford Motor Co. is replacing its original plant at the Rouge River Industrial Complex in Dearborn, Mich., a poster child for the Industrial Revolution, with a green factory that will incorporate lean manufacturing principles.

The new plant will be capable of interchanging three vehicle platforms and producing up to nine models. The goal is to balance manufacturing with environmental sensitivity.

Opening in 1917, the Rouge became the largest complex of its kind in the world—a total manufacturing facility where all components, including steel and glass, would be produced for everything from the Model T to the Mustang. As the century wore on, the plant became dated. There were problems with runoff and water pollution. The Environmental Protection Agency (EPA) ordered Ford to help clean up the Rouge River. In February 2001, the EPA ordered Ford to protect migratory birds, fish and wildlife from oil waste found in the river boat slip next to Ford's property. Ford complied, and has pledged to help clean the river.

Worker safety also became an issue. Aging equipment and human error led to 34 injuries and the death of six employees when a powerhouse boiler exploded in 2000.

Ford broke ground in November 2000 for the Dearborn Truck Assembly Plant, where the next generation of F-150 and Ranger trucks will be produced. It is Ford's first new plant in a quarter century and the centerpiece of the Ford Rouge Center. It is part of a \$2 billion renovation that could take up to 20 years to complete.

**Ford gives
Dearborn
plant eco-
friendly
facelift**

**By Emily
Burch**

**History of the
Rouge**

1915: Ford buys 2,000 acres of mud flats adjacent to Rouge River

1917: Construction begins on Rouge plant

1918: Construction begins on the first manufacturing building

1919: Ford Model T body comes off assembly line

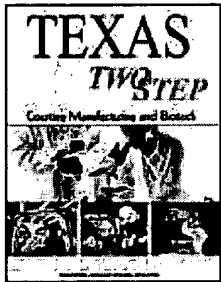
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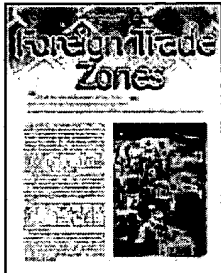
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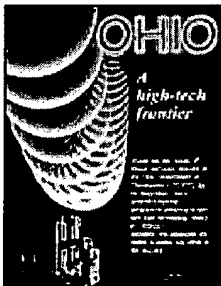
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Making the commitment

Ford decided to replace the plant, renovating the brownfield site instead of moving to a new site, says Ed Lewis, Ford's public affairs manager. "I think the thinking was instead of just picking up and leaving a brownfield site and moving to a greenfield site, we were declaring ourselves indigenous to the area, the community. We were going to put stakes in the ground and remain here." The company was making a dual commitment—to community and environment. "Plus the site itself, what we left behind was Ford's doing ... we were prepared to and had an obligation to the community to clean it up and to make it even better for the next generation, so to speak." Ford will preserve 3,000 jobs at the plant, many of which will be filled by new workers as older employees retire. In contrast to other Ford plants, this one will reduce finished vehicle storage space by 50 percent, focusing on just-in-time (JIT) shipment. "Ninety percent of vehicles we produce [will be] shipped the same day," James Padilla, Ford's group vice president of global manufacturing, said in a published interview. Most plants ship 50 percent of daily production.

Ford has hired Bill McDonough, an "eco-architect" based in Virginia, to overhaul the plant. McDonough, the former dean of the school of design at the University of Virginia and partner in McDonough+Partners, has included an ecologically inspired "living roof," solar and fuel cells, and landscaping in his design.

In the early 1990s, Ford was considering killing the Mustang, the Rouge's only model, and closing the plant. This prompted a nationwide "Save the Mustang" campaign and, locally, a save the Rouge effort. The United Auto Workers and Ford worked to redesign both. In 1997, Ford decided to renovate the plant. The local union and Ford approved the Rouge Viability Agreement and Ford's board of directors agreed to update the site. In May 1999, William Clay Ford Jr., Henry's great-grandson, was named chairman. He vowed to turn the Rouge into a model of sustainable manufacturing. He pressed executives to look beyond a renovation, to decide what Ford's long-term vision should be.

Lewis says sustainable development was a new

1924: Public tours of plant begin

1927: Automated assembly line moved from Highland Park

1927-31: Ford Model A is produced

1932: Ford Model B produced

1932-38: Ford V8 produced

1937: Union leaders beaten by Ford guards; confrontation eventually leads to recognition by Ford of UAW

1938-41: Fords and Mercuries produced at plant

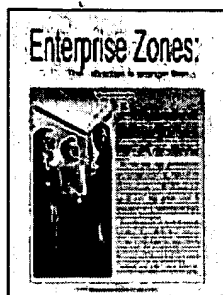
1941: Ford builds first jeep-like vehicles for U.S. military; Ford agrees to UAW contract

1945: Lincoln and Mercury made

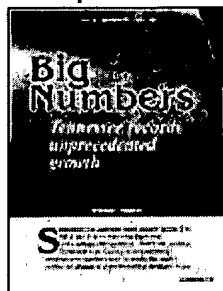
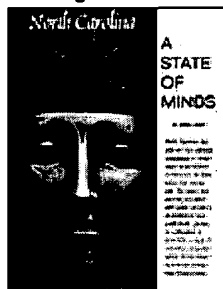
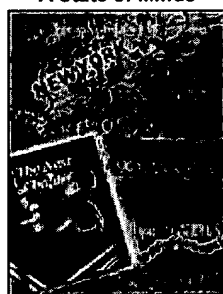
1948: Production begins on 1949-model Ford, company's first new postwar design

1954-57: Thunderbird produced

1954-65: Fairlane made at Rouge



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concept. "We were saying 'The Rouge plant is getting a little old, a little long in the tooth.' We needed to do something to renovate the plant. Now how do you go about that? The normal way would be to take all the old soil out and take it somewhere else, like to a landfill. But I think Bill Ford, his idea was 'What can we do to reinvigorate the area?' Not push our problems to some other place, let's keep our problems to ourselves."

If Ford succeeds with sustainable manufacturing—using production methods that will minimize long-term environmental damage—the new plant will be on par with its Japanese counterparts. The Rouge will have 40 percent fewer workstations as part of its lean manufacturing plan, and workers will have more control over production in their areas.

Employees will work in teams and use the Internet on the floor to "chat" with suppliers or engineers as needed. This technology, the company says, will reduce costs and save production time. If there is a production problem, the team leader could take a digital photo of the problem—say a poorly fitting part—put it online, send it to the supplier and have a solution in minutes. The Internet will also allow Ford employees to track shipments to the floor—and the use of JIT shipments clears away some of the clutter on the floor. Using the Web will also cut parts inventory in half, to 12 hours' worth vs. several days' at other factories.

Ford executives say that the workers are the focus of the new plant. McDonough says that Ford seeks to honor the environment and nature by restoring the plant. Skylights will offer natural lighting in the plant and create an open-air environment. Conference rooms, cafeterias and rest rooms will be more exposed to natural light. The new plant will also feature catwalks that separate workers from machinery and reduce the risk of injury. And, workstations will be ergonomically correct to reduce cases of repetitive stress injuries.

The plant will be worker-friendly in the sense of less physical wear and tear, and it will also be high-tech. To train employees, Ford and the Henry Ford Community College plan to build a technology-training center near the Rouge plant.

1964-present:
Mustang
produced

1965-67: Falcon
made at Rouge

1966: One-
millionth
Mustang made,
two years after
its introduction

1981: Rouge
Steel Co. is
formed

1984: Rouge
Steel breaks
ground for \$145
million casing
plant

1989: Ford sells
Rouge Steel

1999: Six
workers are
killed and more
than 30 are hurt
in power plant
explosion

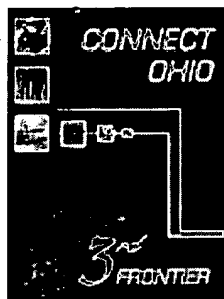
2000: Ford
announces
plans for
renovation and
expansion

SOURCE:
Ford Motor Co.

**Some key
features of the
new plant
include:**

Synchronous
manufacturing
and just-in-time
delivery plans
call for shipment
of 90 percent of
daily production;

Electrical
monorail system
and power roll
lift tables will



Connect Ohio

Clean water

To ease environmental worries and threats to the river, McDonough's plans call for biologically based treatment methods for runoff. The plant roof will be capped by a 454,000-square-foot living roof. It will be covered by foliage and grasses and be capable of holding a few inches of rainfall. McDonough's take on the concept is that if a bird flies overhead, the bird won't know the habitat has been altered. The living roof will also help treat stormwater runoff, which has been a past environmental worry.

Lewis says Ford has test projects in place to find a solution to polluted runoff. "We've got a number of environmental projects going," Lewis says. "One is phytoremediation—where you plant different plants around the site to help rid the soil of contaminants. We also have quite an extensive project with stormwater runoff. What you normally do with a facility like ours is build a big sewer line underneath and get all the rainwater to flow into one big pipe and then flow into some tributary or river. Instead of doing that, what we're doing is being a little more innovative. We've got something called porous pavement in the parking lots. That's basically a permeable gravel. When it rains, it will just seep through the pavement itself so it won't go out into the street and sewers and so forth. Beyond that, we've got a whole system of swales, culverts and retaining ponds that will take care of stormwater runoff, in addition to the living roof. We expect that to hold 3 to 4 inches of rainwater and slow the runoff."

He says Ford expects all of these things to have a big impact on stormwater runoff management. Runoff was one of the primary problems Ford had at the Rouge, he says. These measures are part of the project to protect the river. "One of the things we've learned is that as the water goes through the soil, the water cleans itself through the plants it crosses over," Lewis says. Another eco-perk is the plant's new paint shop. The shop uses water-based primer, base coat paint systems and a high-solids clear coat system, which help reduce emissions. The plant will be more energy efficient, too. Renewable energy sources such as solar cells and fuel cells will be used in addition to skylights.

Will Ford use these techniques in the future?

provide flexibility to adjust line speeds and address quality issues quickly;

Mezzanines and catwalks reduce pedestrian traffic in work areas;

A food court with a patio and rooftop eating space provides more options for employees;

Weekly team meetings—each team has its own meeting room, and

Air conditioning in the plant.

"That's our goal, to replicate what we do at the Rouge ... find out what works and what works well and to replicate that at other facilities," Lewis says. For the project, Ford received an incentives and tax break package valued at \$222 million from the governments of Dearborn, Wayne County and the state of Michigan (\$156 million).

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Revitalization Of Factory Automation - Industry Report
PAINE WEBBER INC.
Lustgarten, E.
NEW YORK

DATE: February 9, 89
INVESTEXT(tm) REPORT NUMBER: 906235, PAGE 69 OF 97, TEXT PAGE
This is a(n) INDUSTRY report.

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MX - Customization

TEXT:

So, if we look at the solution to the CIM gap, as we saw it -- that is, what's the next step in order to get factory automation moving again -- it was basically a system that would allow for information integration, i.e., a fully-integrated real-time and transactional data-management environment, so that programmers and the MIS and financial community would have their data in the form that they needed. However, there would be free-flow to the real-time environment and to the controls environment to extract the data when required and vice-versa. Real-time and the controls environment also need data from the higher-level systems -- the material-handling systems, the material resource planning systems, and the financial systems.

The information integration also provides transparent plant floor and MIS informational access; that is, to allow, again, the access by both communities across this transition layer and also to provide secure controls and decisions systems, so that the control environment can be insured that their controls are secure -- that is, things that happen in the financial or the MIS or the MRP environment will not interact with the controls, as well as the decisions systems being secure -- being able to protect data from being extracted by the plant floor user.

The second solution to the CIM gap is automation tools to increase productivity and decrease the support that's required to put these systems in. The drive is toward universal tools to any industry. The drive is toward scalable and extendable systems that can be put in one plant, and then put in the next plant and just scaled to the requirements of that plant.

The third point, the primary one, is producing re-usable applications or systems so that we avoid the customs solution and the costs of those customs programs; and that systems and tools are available for both non-programmers and also the programmer community.

To go after this, we formed a strategic partnership with *Ford* *Motor* Company. We have a similar partnership with IBM Corporation. But the idea is to go at this problem, or gap layer. *Ford* *Motor* Company had a requirement. They have many, many plants around the world, and they were looking for re-usable solutions so that when we put one system into one plant, they could extract the necessary elements out of that plant and reinstall them in the next plant; therefore, by an economy of scale, they would reduce their actual automation costs. They would provide the pilot *plants* and obviously they had the *replication* need. Measurex Corporation had a proven system and support expertise -- that is, providing those 3,000 systems and the \$1 billion installed base.

They also had a marketing need -- that is, expanding their markets into the discrete marketplace, as well as those hybrid industries. They also required additional tools for increasing their own internal productivity. Measurex Automation Systems was formed to develop those tools, to productize those tools to allow for replication. And we formed, basically, a development environment so that we could quickly go after this problem and produce a return for both companies.

Dialog
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s ((ASAP())Solution? ?) (10n) automotive) and py<=1999

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9	23	((enterprise ADJ (resource\$1 or requirement\$1) ADJ planning) or ERP) AND feasibility	USPAT; EPO; JPO; DERWENT; IBM_TDB	2002/09/19 14:03
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... Design Engineer, ASG Renaissance, Inc. - October 1994 to December 1999. Assigned to **Ford Motor Company**, **AVT-EESE**, October 1995 to December 1999. ...

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... General Motors Institute), who has served as a liaison between Kettering and the **Ford Motor Company**. Boerger recently retired from **Ford** as the director of **AVT** ...

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LSF CASE STUDY

FORD USING LSF TO SLASH DEVELOPMENT TIME

"We get 95 percent of our compute jobs done within eight to 10 hours thanks to LSF. This is a huge improvement for our engineers who no longer need to wait three to four days to get a response." Chris Greiner, Technical Specialist, Ford Advanced Vehicle Technology (AVT) Division.

As the second-largest car and truck producer in the world, the Ford Motor Company is relying heavily on its network of powerful supercomputers and workstations to better design and produce innovative vehicles for consumers worldwide.

Headquartered in Dearborn, Michigan, Ford's Advanced Vehicle Technology (AVT) Division uses the processing power of several massively parallel MasPar supercomputers and a network of workstations to conduct simulation tests on new vehicle designs. The AVT division is part of Ford's Product Development Group, which is at the center of the company's research and development efforts employing approximately 30,000 people.

About five years ago, the AVT Division made the transition from having individual R&D teams maintain their own computer resources, located in three different countries - United States, Britain, and Germany - to centralized management of computer resources at one location in Dearborn, Michigan.

"We switched from scheduling our jobs on Cray supercomputers to running on an application-specific network of MasPar massively parallel supercomputers and high-powered workstations. The advantage of using this network is that it streamlines our research and development process," said Chris Greiner, Technical Specialist, Thermal/Aero Systems Engineering for Ford's AVT Division.

The Problem

The biggest problem that Ford's Product Development Group faced in making this transition was effective allocation of computing resources. As engineers logged onto specific machines to submit jobs, they were often unaware of available networked resources on other machines. Load imbalances on the machines created network bottleneck problems and output delays because users were unable to prioritize jobs or allocate the right resources to tackle them.

That's when the AVT Division started looking at various queuing packages, including Platform's LSF Batch and Cray's NQE. The AVT Division at Ford decided to go with LSF Batch because it allowed users to easily set one queuing system for all the networked heterogeneous systems, which unified job priorities and added flexibility to how jobs were handled. In addition, LSF proved versatile in supporting Ford's in-house applications and commercial

packages, such as UK 3-D and Star CD, which are 3-D fluid simulators.

"LSF allowed us to create a universal queuing system that tied our network resources together by optimizing the throughput of every machine," said Chris Greiner. "When someone submits a job into the queue, it can now be handled by multiple hosts.

LSF handles jobs like a bank line-up, where you wait in a shared queue for the next available teller instead of like a supermarket where you have to pick a queue and you're stuck. That is what we had previously."

Slashing Simulation Tests Down to a 24-Hour Turnaround

This single queue system allowed Ford to dramatically reduce the turnaround time for jobs. Jobs requiring a large amount of memory and CPU intensive, in the past meant a long queue for the weekend. Before LSF, if an engineer didn't get their jobs into the overnight queue by mid-week, they would need to wait until Monday, having the jobs processed over the weekend. That's all changed since implementing LSF.

"We get 95 percent of our compute jobs done within eight to 10 hours thanks to LSF. This is a huge improvement for our engineers who no longer need to wait three to four days to get a response. All the queues have been cleared out by morning when I come in," said Greiner.

In addition, with the supercomputers and workstations running seven days a week, 24 hours a day, remote development offices in Britain and Germany also benefit from the faster turnaround. The German and British engineering teams see a clean queue by the time they get into the office - five to six hours before the United States.

"The last thing you want to worry about as an engineer is when will I get my computation done, when can I look at the results, and so on. Now engineers can look at the queue and know exactly when they'll get their test results back," said Greiner.

LSF CASE STUDY - FORD

"We used to do several hundred job runs on the Crays each month. Since using LSF we've been able to cut our Cray usage in half. Once we got LSF Batch in place, we saw the number of Cray jobs decrease. Even though we haven't changed the amount of work we do on the vehicle program. We don't need to do as much speculatively, which means fewer cycles on the Cray."

Chris Greiner.
Technical Specialist,
Thermal/Aero Systems Engineering for Ford's AVT Division.

Democracy in Action

The initial success of having all the supercomputers and workstations running at optimum throughput was just the beginning. The AVT Division was also able to use LSF to set up other types of queues, including ones for high- and low-priority jobs.

"We created a high-priority or preemptive queue for critical jobs that need a quick turnaround. If a user places a job in this queue it will move the job request to the head of the standard job queue and wait for the next available machine," said Chris Greiner.

The AVT Division decided to be democratic about how it would allocate its computer resources, allowing each individual user to choose his or her job priorities. Once someone submits a job to the high-priority queue, all the users who get "bumped" receive an e-mail so they know the status of their jobs. This creates a self-governing system that up until now has not been abused, according to Greiner.

"We understand how sometimes an engineering team will face a difficult project and require additional computing power. We acknowledge that these situations can arise and in fact are commonplace. The idea is that each individual user is responsible for justifying their computer usage. If someone were to abuse it, everyone else would react," Greiner adds.

The AVT Division was also able to create a low priority queue for book-shelving information or for DOE type of experiments. These job requests don't get into the main queue until all the other requests have been handled. The low-priority jobs will sit there until a machine is free.

Better Results and Less Speculation

By creating a single queuing system, the AVT Division was also able to reduce the number of speculative jobs entering the queue. In the past, engineers would run speculative jobs with a variety of parameter values not knowing which ones would produce the needed results and wait three or four days to get an answer. Now, by being able to turn jobs around in less than 24-hours through LSF, engineers can see the results earlier and quickly focus their efforts on the most productive tasks. Also, by reducing the number of speculative jobs, the network becomes less cluttered enabling users to run more productive jobs.

"The value of using LSF is two fold," said Greiner. "First, we've been able to take a fixed set of compute resources and optimize its usage by being able to put more runs through efficiently. Second, we've been able to reduce the number speculative jobs being run because we get results back faster. Ultimately, LSF gives our engineers more time to think about their results."

Reducing Cray Usage

Outside of the MasPar and workstation network, the group also relies on several Cray supercomputers to run simulation and development tests. The Product Development Group, along with the AVT Division, has been able to reduce the number of runs on Ford's Cray systems because of LSF's versatility in setting-up multiple queues.

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Corporation
Toronto, Canada
Tel: +1 (905) 948-8448
Fax: +1 (905) 948-9975
Toll-free: +1 (877) 528-3676
info@platform.com

US Federal Division
Platform Computing Inc.
McLean, VA, USA
Toll-free: +1 (877) 528-3676
info-us@platform.com

US Headquarters
Platform Computing Inc.
San Jose, California, USA
Toll-free: +1 (877) 528-3676
info-us@platform.com

European Headquarters
Platform Computing Ltd.
Basingstoke, Hampshire
RG24 8NE United Kingdom
Tel: +44 (0) 1256-370-500
Fax: +44 (0) 1256-370-501
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Platform Computing K.K.
Tokyo, Japan
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1	545: Investext(R)_1982-2003/Aug 22
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1	733: The Buffalo News_1990- 2003/Aug 20
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1	810: Business Wire_1986-1999/Feb 28
1	813: PR Newswire_1987-1999/Apr 30
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Examined 300 files	
Examined 350 files	
Examined 400 files	
Examined 450 files	
Examined 500 files	
1	994: NewsRoom 2001
Examined 550 files	
2	995: NewsRoom 2000

gaurz

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s Ford and (thomas(2n)helzerman)

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2	47: Gale Group Magazine DB(TM)_1959-2003/Aug 13
Examined 50	files
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Examined 100	files
2	148: Gale Group Trade & Industry DB_1976-2003/Aug 21
Examined 150	files
Examined 200	files
Examined 250	files
Examined 300	files
Examined 350	files
Examined 400	files
Examined 450	files
Examined 500	files
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Items	File
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3	13: BAMP_2003/Aug W1
10	15: ABI/Inform(R)_1971-2003/Aug 20
Processing	
Processing	
20	16: Gale Group PROMT(R)_1990-2003/Aug 21
2	18: Gale Group F&S Index(R)_1988-2003/Aug 20
Processing	
5	20: Dialog Global Reporter_1997-2003/Aug 22
3	47: Gale Group Magazine DB(TM)_1959-2003/Aug 13
Examined 50 files	
1	95: TEME-Technology & Management_1989-2003/Aug W1
2	99: Wilson Appl. Sci & Tech Abs_1983-2003/Jul
Examined 100 files	
Processing	
26	148: Gale Group Trade & Industry DB_1976-2003/Aug 21
Examined 150 files	
1	275: Gale Group Computer DB(TM)_1983-2003/Aug 21
Examined 200 files	
Examined 250 files	
Examined 300 files	
2	484: Periodical Abs Plustext_1986-2003/Aug W3
3	541: SEC Online(TM) Annual Repts_1997/Sep W3
1	542: SEC Online(TM) 10-K Reports_1997/Sep W3
Processing	
Examined 350 files	
3	553: Wilson Bus. Abs. FullText_1982-2003/Jul
1	570: Gale Group MARS(R)_1984-2003/Aug 21
2	608: KR/T Bus.News._1992-2003/Aug 22
2	613: PR Newswire_1999-2003/Aug 22
Examined 400 files	
12	621: Gale Group New Prod.Annou.(R)_1985-2003/Aug 21
5	635: Business Dateline(R)_1985-2003/Aug 22
1	636: Gale Group Newsletter DB(TM)_1987-2003/Aug 21
1	637: Journal of Commerce_1986-2003/Aug 21
15	649: Gale Group Newswire ASAP(TM)_2003/Aug 21
Processing	
Examined 450 files	
1	713: Atlanta J/Const._1989-2003/Aug 21
1	727: Canadian Newspapers_1990-2003/Aug 22
1	736: Seattle Post-Int._1990-2003/Aug 21
Examined 500 files	
1	768: EIU Market Research_2003/Aug 21
2	810: Business Wire_1986-1999/Feb 28
17	813: PR Newswire_1987-1999/Apr 30
Examined 550 files	

28 files have one or more items; file list includes 551 files.
One or more terms were invalid in 102 files.

Your SELECT statement is:

s Ford and Best()Practice()Replication and py<=1998

Items	File
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2	15: ABI/Inform(R)_1971-2003/Aug 20
2	16: Gale Group PROMT(R)_1990-2003/Aug 21
2	20: Dialog Global Reporter_1997-2003/Aug 22
Examined 50 files	
Examined 100 files	
2	148: Gale Group Trade & Industry DB_1976-2003/Aug 21
Examined 150 files	
1	275: Gale Group Computer DB(TM)_1983-2003/Aug 21
Examined 200 files	
Examined 250 files	
Examined 300 files	
1	484: Periodical Abs Plustext_1986-2003/Aug W3
Examined 350 files	
Examined 400 files	
1	621: Gale Group New Prod.Annou.(R)_1985-2003/Aug 21
1	636: Gale Group Newsletter DB(TM)_1987-2003/Aug 21
2	674: Computer News Fulltext_1989-2003/Aug W3
Examined 450 files	
Examined 500 files	
1	813: PR Newswire_1987-1999/Apr 30
Examined 550 files	

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10 files have one or more items; file list includes 551 files.
One or more terms were invalid in 102 files.

Set	Items	Description
S1	15	FORD AND BEST() PRACTICE() REPLICATION AND PY<=1998
S2	4	RD (unique items) <i>kuic</i>
File	15:ABI/Inform(R)	1971-2003/Aug 20 (c) 2003 ProQuest Info&Learning
File	16:Gale Group PROMT(R)	1990-2003/Aug 21 (c) 2003 The Gale Group
File	20:Dialog Global Reporter	1997-2003/Aug 22 (c) 2003 The Dialog Corp.
File	148:Gale Group Trade & Industry DB	1976-2003/Aug 21 (c) 2003 The Gale Group
File	275:Gale Group Computer DB(TM)	1983-2003/Aug 21 (c) 2003 The Gale Group
File	484:Periodical Abs Plustext	1986-2003/Aug W3 (c) 2003 ProQuest
File	621:Gale Group New Prod. Annou. (R)	1985-2003/Aug 21 (c) 2003 The Gale Group
File	636:Gale Group Newsletter DB(TM)	1987-2003/Aug 21 (c) 2003 The Gale Group
File	674:Computer News Fulltext	1989-2003/Aug W3 (c) 2003 IDG Communications
File	813:PR Newswire	1987-1999/Apr 30 (c) 1999 PR Newswire Association Inc

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Your SELECT statement is:

s (Ford()Motor) and (replicat? (5n) (facilit? or manufactur? or plant or plants))

Items	File
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2	9: Business & Industry(R)_Jul/1994-2003/Aug 21
4	13: BAMP_2003/Aug W1
9	15: ABI/Inform(R)_1971-2003/Aug 20
13	16: Gale Group PROMT(R)_1990-2003/Aug 21
10	20: Dialog Global Reporter_1997-2003/Aug 22
1	75: TGG Management Contents(R)_86-2003/Aug W1
Examined 50	files
3	88: Gale Group Business A.R.T.S._1976-2003/Aug 21
1	141: Readers Guide_1983-2003/Jul
Examined 100	files
12	148: Gale Group Trade & Industry DB_1976-2003/Aug 21
1	149: TGG Health&Wellness DB(SM)_1976-2003/Aug W1
2	180: Federal Register_1985-2003/Aug 21
Examined 150	files
2	262: CBCA Fulltext_1982-2003/Aug
1	275: Gale Group Computer DB(TM)_1983-2003/Aug 21
Examined 200	files
4	349: PCT FULLTEXT_1979-2002/UB=20030814,UT=20030807
Examined 250	files
2	476: Financial Times Fulltext_1982-2003/Aug 22
Examined 300	files
3	484: Periodical Abs Plustext_1986-2003/Aug W3
1	545: Investext(R)_1982-2003/Aug 22
Examined 350	files
1	553: Wilson Bus. Abs. FullText_1982-2003/Jul
3	570: Gale Group MARS(R)_1984-2003/Aug 21
2	608: KR/T Bus.News._1992-2003/Aug 22
1	610: Business Wire_1999-2003/Aug 22
2	613: PR Newswire_1999-2003/Aug 22
Examined 400	files
1	619: Asia Intelligence Wire_1995-2003/Aug 21
5	621: Gale Group New Prod.Annou.(R)_1985-2003/Aug 21
1	624: McGraw-Hill Publications_1985-2003/Aug 21
5	635: Business Dateline(R)_1985-2003/Aug 22
9	636: Gale Group Newsletter DB(TM)_1987-2003/Aug 21
3	647: CMP Computer Fulltext_1988-2003/Jul W4
5	649: Gale Group Newswire ASAP(TM)_2003/Aug 21
6	654: US PAT.FULL._1976-2003/Aug 19
1	660: Federal News Service_1991-2002/Jul 02
Examined 450	files
1	727: Canadian Newspapers_1990-2003/Aug 22
1	733: The Buffalo News_1990- 2003/Aug 20
Examined 500	files
1	748: Asia/Pac Bus. Jrnls_1994-2003/Aug 20
4	813: PR Newswire_1987-1999/Apr 30
1	990: NewsRoom Current_2003/Aug 22
3	992: NewsRoom 2003/Jan-Mar
1	993: NewsRoom 2002/
3	994: NewsRoom 2001
Examined 550	files
1	995: NewsRoom 2000

40 files have one or more items; file list includes 551 files.
One or more terms were invalid in one file.

Set	Items	Description
S1	132	(FORD()MOTOR) AND (REPLICAT? (5N) (FACILIT? OR MANUFACTUR? OR PLANT OR PLANTS))
S2	77	RD (unique items)
S3	37	S2 AND PY<=1999 <i>—WIC</i>
File	9:	Business & Industry(R) Jul/1994-2003/Aug 21 (c) 2003 Resp. DB Svcs.
File	13:	BAMP 2003/Aug W1 (c) 2003 Resp. DB Svcs.
File	15:	ABI/Inform(R) 1971-2003/Aug 20 (c) 2003 ProQuest Info&Learning
File	16:	Gale Group PROMT(R) 1990-2003/Aug 21 (c) 2003 The Gale Group
File	20:	Dialog Global Reporter 1997-2003/Aug 22 (c) 2003 The Dialog Corp.
File	75:	TGG Management Contents(R) 86-2003/Aug W1 (c) 2003 The Gale Group
File	88:	Gale Group Business A.R.T.S. 1976-2003/Aug 21 (c) 2003 The Gale Group
File	141:	Readers Guide 1983-2003/Jul (c) 2003 The HW Wilson Co
File	148:	Gale Group Trade & Industry DB 1976-2003/Aug 21 (c)2003 The Gale Group
File	149:	TGG Health&Wellness DB(SM) 1976-2003/Aug W1 (c) 2003 The Gale Group
File	180:	Federal Register 1985-2003/Aug 21 (c) 2003 format only The DIALOG Corp
File	262:	CBCA Fulltext 1982-2003/Aug (c) 2003 Micromedia Ltd.
File	275:	Gale Group Computer DB(TM) 1983-2003/Aug 21 (c) 2003 The Gale Group
File	349:	PCT FULLTEXT 1979-2002/UB=20030814,UT=20030807 (c) 2003 WIPO/Univentio
File	476:	Financial Times Fulltext 1982-2003/Aug 22 (c) 2003 Financial Times Ltd
File	484:	Periodical Abs Plustext 1986-2003/Aug W3 (c) 2003 ProQuest
File	545:	Investext(R) 1982-2003/Aug 22 (c) 2003 Thomson Financial Networks
File	553:	Wilson Bus. Abs. FullText 1982-2003/Jul (c) 2003 The HW Wilson Co
File	570:	Gale Group MARS(R) 1984-2003/Aug 21 (c) 2003 The Gale Group
File	608:	KR/T Bus.News. 1992-2003/Aug 22 (c)2003 Knight Ridder/Tribune Bus News
File	610:	Business Wire 1999-2003/Aug 22 (c) 2003 Business Wire.
File	613:	PR Newswire 1999-2003/Aug 22 (c) 2003 PR Newswire Association Inc
File	619:	Asia Intelligence Wire 1995-2003/Aug 21 (c) 2003 Fin. Times Ltd
File	621:	Gale Group New Prod.Annou.(R) 1985-2003/Aug 21 (c) 2003 The Gale Group
File	624:	McGraw-Hill Publications 1985-2003/Aug 21 (c) 2003 McGraw-Hill Co. Inc
File	635:	Business Dateline(R) 1985-2003/Aug 22 (c) 2003 ProQuest Info&Learning
File	636:	Gale Group Newsletter DB(TM) 1987-2003/Aug 21 (c) 2003 The Gale Group
File	647:	CMP Computer Fulltext 1988-2003/Jul W4 (c) 2003 CMP Media, LLC
File	649:	Gale Group Newswire ASAP(TM) 2003/Aug 21 (c) 2003 The Gale Group

File 654:US PAT.FULL. 1976-2003/Aug 19
 (c) FORMAT ONLY 2003 THE DIALOG CORP.
File 660:Federal News Service 1991-2002/Jul 02
 (c) 2002 Federal News Service
File 727:Canadian Newspapers 1990-2003/Aug 22
 (c) 2003 Southam Inc.
File 733:The Buffalo News 1990- 2003/Aug 20
 (c) 2003 Buffalo News
File 748:Asia/Pac Bus. Jrnls 1994-2003/Aug 20
 (c) 2003 The Dialog Corporation
File 813:PR Newswire 1987-1999/Apr 30
 (c) 1999 PR Newswire Association Inc
File 990:NewsRoom Current 2003/Aug 22
 (c) 2003 The Dialog Corp.
File 992:NewsRoom 2003/Jan-Mar
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File 993:NewsRoom 2002/
 (c) 2003 The Dialog Corporation
File 994:NewsRoom 2001
 (c) 2003 The Dialog Corporation
File 995:NewsRoom 2000
 (c) 2003 The Dialog Corporation

3/9/3 (Item 1 from file: 13)
DIALOG(R) File 13:BAMP
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1126022 Supplier Number: 02022950 (THIS IS THE FULLTEXT)
Making real time relevant
(Delta Motor in South Africa uses supervisory control to link real-time
assembly data with ERP)
Article Author(s): Pearton, Michael; Allen, Gavin
Manufacturing Systems, v 17, n 6, p 48
June 1999
DOCUMENT TYPE: Journal ISSN: 0748-948x (United States)
LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1976

ABSTRACT:

Delta Motor Corp. (DMC), formed in 1987 through a management buyout of the former General Motors operations in Port Elizabeth, South Africa, is meeting vehicle manufacturing challenges comparable to what the world has to provide in a small assembly plant context. DMC initially implemented SAP America's (Newtown Square, PA) R/2 mainframe-based enterprise system, including the Shop Floor Control module. It was subsequently determined that the system was not capable of handling multiple plants. The latest improvement to the corporate system is the completion of a companywide installation of SAP's R/3 enterprise resources planning (ERP) system. DMC operates R/3 in a mainframe environment. The upgrade to R/3 was completed in January 1999. This included an upgrade of existing R/2 applications to R/3, which works in concert with the plant-floor vehicle tracking system (VTS) to achieve high levels of productivity by implementing low-level planning and shop-floor production optimization. As a result, DMC can provide accurate, integrated real-time data to all relevant areas of the firm's business with as little human intervention and paperwork possible. The VTS that completes the connection is based on the InTrack system. The VTS was developed and installed in nine months by DMC internal staff, with outside support from ISIS, and Wonderware distributor Futuristix (Johannesburg). As the basis of the VTS, InTrack communicates with the mainframe computer system at the head office. The VTS receives work orders and offers regular feedback to the R/3 business system and the DMC vehicle distribution system to handle material consumption information, manage dealer notification, and offer after-sales support.

TEXT:

Automaker uses supervisory control to link real-time assembly data with ERP

Michael Pearton

Struandale Plant Manager
Gavin Allen

MES Specialist

Delta Motor Corp.

Port Elizabeth, South Africa

Although Delta Motor Corp. (DMC) is a little more than a decade old, it is meeting vehicle manufacturing challenges comparable to what the world has to offer in a small assembly plant context. We recently started fresh with enterprisewide computing systems that allow us to link corporate business and financial systems to realtime production operations on the plant floor--extending our reach to outside suppliers of components and subassemblies for the Opel Astra and Corsa car lines, and Isuzu commercial vehicles.

DMC was formed in 1987 via a management buyout of the former General Motors operations in Port Elizabeth, South Africa. In late 1994, DMC purchased a former *Ford* *Motor* Co. plant in Struandale, stripped it to bare bones, and began construction of a new assembly plant. The plant was designed to produce about 30,000 Opel Corsas per year with one-shift operations, and up to 85,000 on three-shift operations. The company now produces three primary vehicle body styles with up to 17 different model derivatives, all with a capacity of nearly 30,000 cars per year.

photo omitted

DMC initially implemented Newtown Square, Pa.-based SAP America's R/2 mainframe-based enterprise system, including the Shop Floor Control module. It was subsequently determined that the system was not capable of handling multiple plants and that we required a link between the SAP system and shop-floor control systems to track upwards of 4,000 components, all of which are used in every vehicle we produce.

Systems integrator ISIS (Pty) Ltd., based near Johannesburg, recommended the addition of Irvine, Calif.-based Wonderware Corp.'s InTrack resource management and work-in-process (WIP) system for tracking plant-floor production from raw materials to finished cars. The intent was to develop low-cost yet powerful computing capabilities using off-the-shelf personal computer (PC) and network hardware, and Windows NT-based application software.

The next big move

The latest enhancement to our corporate system is the completion of a companywide installation of SAP's R/3 enterprise resources planning (ERP) system. DMC runs R/3 in a mainframe environment. The upgrade to R/3 was completed in January 1999. This included an upgrade of existing R/2 applications to R/3, which works in concert with our plant-floor vehicle tracking system (VTS) to achieve high levels of productivity by implementing low-level planning and shop-floor production optimization. As a result, DMC can offer accurate, integrated real-time information to all relevant areas of the company's business with as little human intervention and paperwork possible. This approach, initially deployed in the Struandale plant, is now being extended to another assembly plant in South Africa, and is expected to bring about new sets of common practices in both plants.

The VTS that completes the link is based on the InTrack system. The VTS was developed and installed in nine months by DMC internal staff, with outside support from ISIS, and Wonderware distributor Futuristix, based near Johannesburg.

In addition to the SAP and shop-floor interfaces, InTrack allows us to set up our own parameters for level-scheduling algorithms so we can maintain different and more efficient schedules for the body shop, the paint shop, and the trim & assembly line.

It also streamlines our broadcasting procedures to lean suppliers that deliver components and subassemblies, such as seats or wheel assemblies, in the proper sequence to match the vehicles coming down the line. In the new system, all suppliers deliver their components directly to the production line, and our team members install them. This system enables us to make every variation of our vehicles all the time.

photo omitted

The enterprisewide production system provides:

- * improved manufacturing productivity and efficiency;
- * reduced WIP and stock holding;

- * reduced vehicle incompletes and rework volume;
- * reduced per-vehicle production costs, with corresponding enhancement of the corporate bottom line;
- * enhanced data integrity; and
- * simplified communications interaction with outside suppliers, which improves supplier efficiency.

Streamlined planning

As the basis of the VTS, InTrack communicates with our mainframe computer system at the head office. The VTS receives work orders and provides regular feedback to the R/3 business system and the DMC vehicle distribution system to handle material consumption data, manage dealer notification, and provide after-sales support.

photo omitted

Delta dealers from around the country place orders for the Corsa vehicles on our vehicle distribution system (VDS) mainframe. Production planning takes place in a multilevel system, from 12-month forecasts down to four-day production schedules on R/3, which downloads the production order data to the InTrack VTS on a daily basis. Since the InTrack VTS is mission-critical and cannot be out of commission for more than a few minutes, the link between it and the R/3 mainframe is redundant. In addition, data can be handled electronically or manually, using electronic media.

Our planners first analyze production orders received from R/3 on the VTS production planning interface. They scroll through all orders in the system, including those that have not been scheduled by the balancing algorithm, which enables them to resequence production orders manually, if required. Planners can place production orders on hold, for whatever reason--usually only for a material shortage--and can release them at any time.

A vehicle is manufactured every three minutes at the Struandale plant and, while the process is effectively "continuous" production of discrete units, production documentation is broken down into half-hour batches of 10 vehicles each. Every half-hour, the planner releases a batch of 10 production orders, which are initiated from InTrack, to the shop floor for the start of production. After production orders for the batch of 10 have been initiated, the InTrack system automatically prints build documents, broadcast documents, and accompanying bar code labels. The broadcast documents are distributed to the various areas in the body shop to start the orders in the correct sequence.

Extensive tracking

The Corsa assembly process goes through four major stages: body shop, paint shop, trim & assembly lines, and final quality inspection. The InTrack VTS is assigned the task of tracking the production of each vehicle, as well as the critical components and any additional resources used to manufacture each vehicle. This information is then returned to R/3 and vehicle distribution systems for further business requirements, such as consumption of material, production information for dealers, and ERP functions. All production reporting and production analysis is conducted directly on the InTrack system.

Each vehicle is assigned a unique ID by a bar code label attached to the vehicle body. This bar code is read at nine monitor points (MPs) strategically located throughout the plant, from the body shop to final inspection. As it passes each MP, the bar code is scanned manually or by a fixed overhead scanner, and the data is transmitted back to InTrack, where

it is compared, checked, and validated against the schedule. Any problems--such as the vehicle being in the wrong place or taking too long to pass through a workstation--are immediately highlighted so corrective action can be taken.

The system automatically triggers orders to various just-in-time (JIT) suppliers, advising them to deliver particular components or subassemblies to specific points along the production line. It also interfaces with three shop-floor machines for specific tasks. The VTS feeds the vehicle identification number (VIN) to a machine in the body shop, which then engraves the VIN on the chassis. It also transmits a message to the body plate machine, which prints the unique body plate fitted to each vehicle. At the end of the line, it passes data on the engine, gearbox, VIN number, and ignition key number to the engine computer operating system (ECOS) machine, which programs the vehicle's on-board computer with full vehicle information.

Each MP station also is equipped with a Broderick operator interface that displays messages and allows operator input. There are numerous checks and balances in the system to ensure that every possible problem is considered. Error messages are displayed locally on the operator displays, alerting operators to problems using a buzzer and lights on the front panel. Simultaneously, error messages are displayed on the InTrack planning workstation for corrective action by management.

The MPs also double as consumption reporting points to the ERP system. When a vehicle passes each point, the InTrack system automatically advises the mainframe VDS that this event has occurred, and transmits the serial number, check point number, special part data, color, trim sequence number, and the system date and time. This information is required for the National Traffic Information System (NATIS). R/3 updates its inventory records and maintains knowledge of the vehicle status. At this stage, R/3 does not require real-time information, so the "granularity" of the information in the business system is less than that of the InTrack production management system.

In any mission-critical application, fallbacks and contingencies are necessary. In the case of trim and door line build documents, they can be completed manually at any point throughout the plant. If there is a failure with the automatic broadcast fax of documents to parts and subsystem suppliers, paper forms can be generated and faxed manually. There are more than 20 different contingency plans in place that allow for every controllable eventuality on the plant, including LAN breaks; down planning workstations, down tag server, or down operator workstations; printer and bar code printer failures; electrical power or backup UPS failures; and damaged documents.

World-class results

By South African standards, the Struandale plant is about 50 percent more productive than other vehicle manufacturing plants, with a smaller staff than most other companies. InTrack is a key enabler of this smooth-running production system. It has significantly reduced the risk of production losses because we are able to maintain production for two to four days, even in the event of the mainframe-based SAP system being down. In addition, the system is scalable so it can grow in size and functionality as the company grows. Results have been so good with the initial installation at the Struandale plant that the entire system has now been *replicated* and expanded at the main *plant* in Port Elizabeth.

We were pleased with the InTrack and InTouch systems for many reasons, but primarily because of the tremendous ease of development they provided. The VTS was configured and running in a matter of months, and at much lower cost than we anticipated. In addition, because it runs on the Microsoft

Windows NT operating system and utilizes standard Microsoft development tools, it provides a standard for more facilitated maintainability and implementation of future systems.

We've developed many world-class manufacturing techniques that we have now implemented at the Port Elizabeth plant, with about 40 InTrack monitoring points in the VTS system, six of which are SAP link points. In the process of bringing up the VTS, we've been using newer hardware solutions and adding continuous production refinements that we can bring back to the Struandale plant to complete the circle.
Delta Motor Co.

Port Elizabeth, South Africa

PRODUCTS:

Opel Astra and Corsa car lines, and Isuzu commercial vehicles, in three primary vehicle body styles with up to 17 different model derivatives. Plant capacity is nearly 30,000 cars per year.

PLANT OPERATIONS SOLUTION:

The InTrack module of Wonderware Corp.'s FactorySuite automation application development tools. FactorySuite includes tools for configuring applications for supervisory control and data acquisition, PC-based machine and process control, a real-time relational database, a flexible batch management system, the InTrack work-in-process tracking system, and integral Internet/intranet remote viewing systems. DMC uses the InTouch human-machine interface software for operator interface stations throughout the plant.

PLATFORM

- * Client PCs have Pentium processors running on Windows NT and Windows 95.
- * Compaq dual Pentium Pro database server using Raid 5 technology running on Microsoft's SQL Server.
- * 10baseT Ethernet (3Com cards) and BitBus networks.
- * DataLogic scanners are linked to the system via Broderon FEDs.
- * Hewlett Packard Laserjet printers and Novexx thermal transfer printers.

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3/9/4 (Item 1 from file: 15)
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02423481 117543130
Management in South Korea: a review
Morden, Tony; Bowles, David
Management Decision v36n5 PP: 316 1998 CODEN: MANDA4 ISSN: 0025-1747
JRNL CODE: MGD
DOC TYPE: Periodical; Feature LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 10751

ABSTRACT: This research analyzes and illustrates selected aspects of management in South Korea. South Korean management is placed within its South East Asian context; but western influences on it are also identified. Parallels with French management are drawn. The paper describes the national and business culture of South Korea. It analyzes prevailing approaches to organization and communication. It discusses and illustrates the changing role of the taipan, the family, the clan and professional management within the context of the ownership and management of Korean enterprises. It examines working practices and relations. It analyzes and comments on style of management. The paper deals with issues of internationalization and globalization. A number of issues are analyzed that are likely to affect South Korean management after the crisis of 1997-1998, and more generally in the foreseeable future.

TEXT: Tony Morden: University of Teesside, School of Business and Management, Middlesbrough, UK

David Bowles: Director of Operations, Northern Development Company, Newcastle-upon-Tyne, UK

South Korea

An overview

South Korea has a population of 44 million people. It is a relatively newly industrialised country. It has experienced rapid growth in output, productivity, and per capita income since the 1960s. It was in 1995 the world's eleventh largest economy and twelfth most important trading nation (Far Eastern Economic Review, 1996). In 1962 its per capita income was \$87; by 1995 it was \$10,000. The country has become a key global player in the manufacture of cars, electronic products, steel, textiles, and shipbuilding. It is one of the emergent Asian "Tiger" economies.

Korea was annexed by the Japanese between 1910 and 1945. While relationships between South Korea and Japan have officially been normalised, this former Japanese colony regards Japan as an important economic rival. Competing directly with Japan has become a national and cultural priority of the Koreans, who are driven by a desire to achieve more than that attained during recent decades by the Japanese. Many Koreans still feel (and display) deep suspicion and resentment towards the Japanese. For instance, a Japanese attempt to annexe a rocky island in the Sea of Japan during 1995 led to large and violent demonstrations in Seoul.

Nevertheless, Japanese influence on South Korean business organisation has been significant, for example because of:

- infrastructure developments put into place during the colonial period;
- the cumulative experience of the many Korean emigres who had lived in Japan prior to repatriation in 1945;
- the influence of post-war Japanese industrial policy, and its selective imitation by South Korean governments (especially that of President Park

Chung Hee);

- the widespread application of Japanese technology and techniques of operations management.

Indeed, paradoxically, much of South Korean industry has developed from a base of acquired but dated post-war Japanese and Western technology, for example:

- Daewoo - General Motors, Vauxhall-Opel.
- Samsung - Nissan, Sanyo.
- Ssanyong - Mercedes Benz.

Religious and philosophical beliefs include Confucianism, Buddhism, and Christianity. Koreans also share a Taoist tradition of holism with their South East Asian neighbours.

There is a very strong commitment to education, with high levels of literacy and high levels of achievement. South Korea is building a strong reputation for the quality of its education. The country now boasts a high proportion of engineers and scientists per head of the population. About 70 per cent of the South Koreans who make up the country's work force graduate from high school.

Under the government of President Kim Young Sam (elected for a five year term 1993-1998), the South Korean government embarked on a programme of economic revitalisation and deregulation (in part forced on it by a desire to join the Organisation for Economic Co-operation and Development (OECD)). Government controls on private sector business activity are selectively being cut back. The present government is proceeding with deregulation, economic restructuring and liberalisation, internationalisation, and foreign inward investment. Financial and banking reforms aim to reduce the high level of government interference that has hitherto characterised the country's business affairs, and to improve access to capital for the SME sector. Small firms employ about 70 per cent of the South Korean workforce.

South Korea joined the OECD in December 1996. The country experienced a major economic crisis during 1997-1998, and was forced to seek financial assistance from the International Monetary Fund (IMF) in order to re-establish economic stability.

National culture

South Korea is characterised (Hofstede, 1991) by:

- large power distance, and authoritarianism;
- collectivism and communitarianism (associated with family and clan membership);
- strong uncertainty avoidance.

Morden (1996) suggests that the South Koreans are:

- monochronic - polychronic (that is, they are at the same time persistent, focused, time-constrained, organised, flexible, and opportunistic);
- relatively high context in character (that is, they tend to obtain information from, and place more reliance on, personal and family networks, rather than formal research base or information sources that are available to them).

While sharing holistic characteristics with its eastern neighbours, South Korea's uncertain political relationships with Stalinist North Korea, and

its long-standing contacts with the USA, have induced a strong streak of pragmatism.

South Koreans do not easily forgive slights to their personal or national pride, and are not embarrassed about giving vent to their feelings. For example, there was a strong and hostile public reaction to the 1997 French Government decision not to sell Thomson CSF to Daewoo after agreement had in principle been reached between the two companies.

The widespread public anger over labour law changes made in December 1996 that erupted into violent street demonstrations represents the Korean concept of han, which is resentment or frustration felt over unjust or inequitable treatment. A manager with Hyundai commented (Burton, 1997a) that "we want to get rich together or poor together. Otherwise we become deeply resentful."

The economic events of 1997-1998, and the need to seek IMF assistance, were perceived by South Koreans as a major national humiliation. They represented a massive loss of face relative to the rest of the international community, and have stung the Koreans into a robust and disciplined response to restore their prestige and status. Anecdotal evidence indicates that in excess of Pounds 700 million has been contributed to national funds by the private donation of gold and jewellery by the South Koreans themselves.

Business culture

Chen (1995) notes (p. 213) that the Korean management system has three major sources of influence. The first is Confucianism, which was the state philosophy of Korea for more than 500 years, beginning in the Yi Dynasty in 1392, and ending in 1910 when Korea was annexed by Japan ... the second and third sources are the more recent Japanese and American influences. Many Korean individuals and companies have close business ties with both of these countries.

Fukuyama (1995) comments (p. 131) on "the very strong Protestant Christian influence in the twentieth century". He notes (pp. 141-2) that "Korea is the only country besides the Philippines in East Asia that has a significant Christian population. Christian conversion got underway during the Japanese occupation, when it constituted a somewhat less dangerous form of protest against Japanese power. After the Korean War, Korea's vital strategic tie with the USA proved a gateway for American cultural, and hence religious, influence. The Christian population of Korea mushroomed after the war, and it now alone constitutes upwards of 20 percent of the total ... Christians have been out of proportion to their numbers in the political and social life of the country. The South's first president, Syngman Rhee, was a Christian; Christians were very active in the democratic protest movements that led ultimately to the fall of the military government in 1987; and three of the best universities in Korea today are Christian sponsored. Korean Protestants have certainly participated enthusiastically in economic life".

South Korea shares with Japan the fierce market competition and the characteristic of "competitive oligopoly" between large conglomerates. The South Korean business groupings or conglomerates (the chaebol) have typically received government backing, and tend to follow the prevailing strategy of concentrating on key areas of industrial development.

Prestige attaches to employment with the large chaebol corporations. These are able to recruit the best graduates from the most prestigious universities.

Personal qualities of respect, tolerance, self-confidence and patience should be adhered to in any business situation. Esteem is attached to educational attainment and job status.

The South Koreans are determined and persistent negotiators. They have a reputation for aggression; and often base their negotiating stance on a win-lose philosophy in which they will attempt to secure the result they want even if it is obtained at the expense of the perceived failure of the other party to the negotiation. On the other hand, outside of the negotiating arena the South Koreans are hospitable, taking their role as hosts seriously. Personal entertainment and the giving of gifts play an important role in the building of successful relationships.

Three styles of Asian capitalism

Chen (1995) describes the emergence of three dominant systems of Asian capitalism, each of which is represented by a particular type of organisation. These are:

- the large and complex networked Japanese business, known as the kaisha or in its extended form the kieretsu;
- the large and complex family or clan based South Korean conglomerates or chaebol;
- the smaller but strongly networked and inter-connected overseas Chinese family business or CFB.

Redding (1997) comments of these dominant organisation structures that:"

Each of these instruments for bringing together the components of economic behaviour has emerged as a distinct response to its circumstances. They are embedded in the cultures and development histories of their societies. They are not copies of Western forms and their behaviour may not follow Western rules or ideals. In simple terms they exist for different reasons.

The main reason for the existence and the driving logic of the large American corporation is return to shareholders but that of the kaisha is to employ people. The chaebol has derived much of its dynamism from its contribution to the national development goals of Korea. The Chinese family business exists primarily to create and sustain family fortunes.

The outcome of these routes to modern capitalism is that the Japanese form is a large, professionally managed and highly complex enterprise with wide ownership; the Korean is a huge family business run like a regiment; and the Chinese is a small family business networking to escape the limitations of its scale and doing so successfully.

When a society develops a form of organisation that is ... widespread, it usually means there is a shared heritage of influences ... these influences are historical, and the more recent are those connected with the way a country modernises itself, in particular the way it organises access to capital and to human skills. Whether you get your capital from a market, from the government, from banks or from your friends will make a big difference to how you go about using it and accounting for its use. Capital from the market drives Anglo-Saxon companies to meet the quarterly expectations of a ravenous investing public, and also directs investment rationally to areas of maximum return in the short run. For the Japanese, capital from the market is of less account than that from companies in the same group or from banks, and their interests are less in short-term gain than in accumulating long-term strength. Korean chaebol have a history of dependence for capital on government and of a consequent need to accommodate government guidance on strategy ... the result in both cases is that each of these systems of capitalism has been able to take the long perspectives needed to foster large corporations handling highly complex industry.

Other features older and deeper than modern policies have helped large Japanese and Korean organisations to co-ordinate human skill, capital, technology, and market know-how and produce world-beating products ... these extra features include social norms supporting acceptance of authority and discipline, a sense of the importance of the organisation in one's life and a consequent wish to belong to it, an association of individuals with the collective good of the group and intense competitiveness on behalf of the nation via the company." Contemporary South Korean management

Business organisation: the chaebols

There are two levels of organisation in South Korea: individual firms, and larger networks which unite these individual corporate entities. The Korean conglomerate networks or business groupings are known as the chaebol. Virtually the whole of the large business sector in south Korea is part of one or other of the chaebol networks.

The chaebol have usually been family-owned (or family-controlled) and kinship-based, recruiting from certain clans and regions. They include such corporations as Samsung, Hanjin, Daewoo, Hyundai, and Lucky-Goldstar (LG).

Chen (1995, p. 4) notes that "the chaebols have led Korea's revival from a war-devastated, agriculture-dominated economy into one of the most dynamic economies of the ... tigers. Like the keiretsu, they are extremely large and sophisticated. They have maintained" (or been forced to maintain) "close relationships with the Korean government ... also, like the Japanese, the chaebols have expanded very rapidly in the world market and produce major international brands. Despite their pronounced success, these groups are still dominated by founding family members and seem to be even more closely-knit and competitive in spirit than their Japanese counterparts".

The chairman and senior staff of chaebol companies are typically proud of their humble origins. It is not unusual for visitors to be reminded of the comparatively recent founding of their business, many of which (such as Daewoo or Lucky Goldstar) were only established after the Second World War or the Korean War. Boundless ambition is demonstrated. Colleagues and visitors are frequently told of the company's global ambitions, or of the desire to become one of the largest firms in the world in its sector.

There is often competitive (and clan-based) tension between chaebol groupings. For instance, Lucky Goldstar will not locate near Samsung. This syndrome of inter-company distrust extends deep into the management hierarchy. A confrontation occurred in the automotive sector when Samsung's attempt to acquire the assets of the former Kia Motor Company resulted in public condemnation by other companies in that sector.

As with the Japanese keiretsu, the member firms in a Korean chaebol own shares in each other and tend to collaborate with each other. However, unlike Japan, the South Korean networks are not centred around a private bank or other financial institution. This is because all South Korean banks were state owned until the 1970s, and have been used directly by the South Korean government as a tool of economic, industrial, and developmental policy.

The predominance and power of the large Korean corporations; and South Korea's highly concentrated and focused industrial structure can, in particular, be explained by the catalytic role played by the South Korean state. State policy deliberately promoted conglomerate structures as a development strategy in the 1960s and 1970s.

Ownership and management

Ownership and management have not been separated in many large South Korean corporations. The owner family has actively participated in the management process; and family or clan members have tended to dominate the positions of power.

Koreans value blood relationships very highly. They are members of an extended clan, the chiban, which provides broad-based security for family and clan members. The larger the chiban, the broader based is the security for members of the clan; and the greater the pool of relatives from which recruitment can take place.

Business founders are expected not only to take care of their own immediate family members, but other relatives also. The kinship-based relationship with the owner is called hyul-yun.

Taipans

The lynchpin that has traditionally held the different activities of the chaebol together, and given them direction, has been consistent and assertive leadership by the autocrat or taipan. No matter how great the variety of family or clan affiliation, or the level of operational diversification, the taipan has provided a point of focus and power such that activities are co-ordinated and decisions are made.

The taipan is defined by Cragg (1995) as the "supreme ruler" or "big boss". The title of taipan is accorded in the East to those leaders considered worthy of great respect, in the strictest of Confucian traditions. This respect is paid to the taipan's position; and to his business acumen, experience, and achievement.

Cragg (1995) describes taipans as sharing such characteristics as being:

- strongly autocratic in style;
- strongly entrepreneurial and opportunistic;
- risk-takers (for whom "there is no shame in attempt or failure; only in a failure to try");
- exponents of decisive or rapid decision making;
- users of networks and connections (guanxi);
- keen to nurture creativity and encourage innovation;
- persistent attenders to detail;
- skilled at managing and manipulating face;
- steeped in the ways of both the East and the West, and being capable of managing the cultural schizophrenia and dilemmas to which such a dual focus gives rise.

Cragg (1995, p. 137) comments that "the taipans of Korea and their business culture are said to be the world's toughest. These businessmen are fearless in their ability to use pae-gi, that is, aggressive determination, to overcome obstacles from any quarter ... traditionally, the taipans are above all aggressive in business, demanding results".

In order to consolidate their early gains in the world marketplace, the South Korean taipans persistently set about improving the education and skill of their workers, to ensure that quality, rather than low cost, would allow them to maintain their competitive edge.

Professional management

Professional managers and executives (many of whom have studied or been trained in the USA) are becoming an increasingly powerful force in South Korean companies. Chen (1995, pp. 215-16) notes that "many of these managers are ... recruited through open competition" from elite social groups. Common geographical and school/university ties also play an important role in the formation of management power groups. Chen (1995) comments that "a common practice is for owners to bring their school (or university) and hometown friends into management. In some Korean companies, top management positions are predominantly filled by those who are from the same geographical area ... in other companies, graduates from elite universities, like Seoul National or Yonsei, dominate top management". The growing importance and influence of professional managers has been recognised by the Korean Stock Exchange, which is trying to promote stock option schemes for company managements (Saragosa, 1996a).

Certain parallels with French professional management are described in a later section of this article.

Working practices and relations

Organisations reflect the prevailing social pattern in being hierarchical and disciplined. There is traditional respect for authority, seniority, and job status. A significant degree of loyalty to the employer or taipan has been expected. The South Koreans display humanist characteristics in that employees are regarded as an important asset. Training is seen as an integral part of the business activity; and companies above a certain size are required by law to provide training for their staff.

Chen (1995, p. 218) comments that "Koreans are highly motivated workers and known for enduring long work days. The motivation of Korean workers is influenced by traditional values as well as by realistic needs. The key Confucian values of diligence and harmony have contributed to a relatively high work ethic. The instinct for survival has also been an important driving force among Koreans, who have been haunted by instability and poverty throughout most of their recent history ... while the specific motivations of Korean employees vary dependent on the size of the company and the level of seniority, high wages and job security tend to be the most important motivational factors".

The reward and promotion system in South Korean companies is traditionally based on seniority, but performance is becoming an increasingly important factor. Wages are generally based on seniority, but bonuses may be awarded based on performance. Promotion is based on a number of criteria, including seniority, performance, family ties, region of origin, and university attended.

Fukuyama (1995) suggests however that forms of communal solidarity that permeate the Japanese corporation tend to be less developed in South Korean ones. For example:

- The rate of employee turnover, the raiding of other companies' skilled labour, and the incidence of employee unrest and industrial action, are all higher in Korea than in Japan.
- Layoffs in large companies are more common than in Japan, for instance as a result of the current wave of delayering and downsizing being experienced in South Korea.
- The group of core employees to whom the company feels strong commitment is typically smaller than in a Japanese corporation.

Labour-management relationships are more adversarial than in Japan, following a more western model of conflict. The managements of chaebol companies tend to be anti trade union, in the past preferring (if possible)

not to recognise them if such an option was available. Industrial relations disputes sometimes degenerate into hostile confrontations and violent public demonstrations. There is no effective state social security system. Family groupings are expected to cope with unemployment and its consequences for individual members.

Fukuyama (1995, p. 135) suggests that in general "Korean corporations have never had the sense of managerial paternalism (amae) that exists in Japan or Germany, with (their) extensively ... developed welfare for employees". On the other hand, "individual corporate cultures ... to some extent override the broader tendencies. Thus, for instance, Samsung's founder, Lee Byung Chul, made greater efforts to create a collegial atmosphere within the company than did Hyundai's more authoritarian Chung Ju Young". As a result, Samsung has experienced a significantly lower level of strike activity or employee unrest than for example Hyundai.

Style of management

Fukuyama (1995, p. 134) comments that "virtually all comparative studies of Korean management (have indicated) that Korean businesses tend to be run in a hierarchical, authoritarian, and centralised manner ... this was particularly true of ... chaebol still run by founding entrepreneurs, who insisted on making all major management decisions personally ... the authoritarian nature of decision making in Korea makes it easier for Korean companies to move quickly and decisively; they are not bogged down by the Japanese style need to develop extensive consensus throughout the hierarchy before making a move. This more decisive style, however, can also mean that decisions are not adequately vetted by staff and (may) be made on the basis of insufficient knowledge". The Financial Times (Merchant, 1996) notes in a similar vein that "the family ownership of the chaebol means that investments are mainly decided by the top man and are made quickly ..." says Park Tae-ho, vice president of the Korea Institute for International Economic Policy. He added that such decisions may be made "without long and careful preparations".

On the other hand, the process of investment decision-making has become more sophisticated in character as South Korean companies gain experience of Western approaches to facilitating globalisation and inward investment into other countries. Korean companies have found that they cannot "dictate" the terms on which inward investments are to be made in the same way as they have been able for instance in developing countries such as Mexico and China.

The organisational structure of many South Korean companies has been characterised by a high degree of formalisation and centralisation. Authority is concentrated at senior levels in the managerial hierarchy, with major decisions (especially financial ones) requiring *kyul-jae*, a formal procedure of approval from top levels of management which involve taking many chops (personal stamps of approval). Chen (1995, p. 214) comments that "the Samsung group in the past used a process of 21 chops, which took several months to get a project approved. After Kun Hee Lee took over the group, he demanded that these 21 chops be cut down to three".

South Korean companies have usually had a "tall" hierarchical organisation structure. Chen (1995, p. 214) notes that "executives tend to be supported by deputies and assistants (in) line positions ... this increases the layers of vertical hierarchies conducive to a centralised and tall organisational structure. Another outstanding organisational feature of Korean companies is that their vertical and hierarchical control is supported by strong functional control from staff departments like planning, finance, and personnel. Korean companies attach great importance to functional specialisation, allowing the planning and finance departments to exercise significant functional control under the leadership of the chief executive. Many chaebols have (or had) a planning and co-ordination office under the group chairman, which is responsible for allocating major

internal resources within the group. Therefore, many Korean companies have a combined organisational structure placing a vertical concentration of decision-making power at the senior levels of management; and a horizontal concentration of functional control in staff departments".

Leadership and decision making has been influenced by family tradition. Korean corporate leaders, especially founders, tended to manage on the basis of the principles governing family or clan. In the traditional Korean family, the father is the unquestioned and respected head. He has almost absolute power to wield if he so wishes. The traditional Korean father also had the responsibility of feeding the family and deciding the future of his children. One legacy of such a family tradition for business leadership in Korean companies has been the strong authoritarian style of superiors in the managerial process. Chen (1995, p. 217) comments that "a top-down decision-making style is fairly typical ... usually, 80 percent of the authority lies in the upper management level, with middle or lower level management having very limited authority ... nevertheless, the authoritarian style is not despotic. Corporate leadership in Korean companies is also heavily influenced by a key value of Korean behaviour, inwha, which is defined as harmony and is similar to the Japanese wa. However, inwha does not emphasise the group element as in wa. Inwha emphasises harmony between unequals in rank, power and prestige" (a classic Confucian concept). "Korean managers cherish good interpersonal relationships with their subordinates and try to keep the needs and feelings ... of subordinates in mind".

South Korean managers tend to make decisions with the consultation of subordinates. The Korean process of informal consensus formation is called sajeonhyupui, and has similarities to the Japanese nemawashi. Chen (1995, p. 218) notes that "managers maintain various interactions on an informal basis with ... subordinates as a way ... to achieve harmony-orientated leadership, which is based on mutual trust and benevolent authoritarianism".

Communication

Given the character of the traditional management style described above, it is not surprising that formal communication is mainly achieved along vertical hierarchies. In this vertical communication process, superiors are expected to give directives while subordinates are expected to understand and implement those directives. Superiors tend to issue general directives, as opposed to specific and detailed ones. Subordinates then use their own judgement about how to implement. They may be reluctant to ask for explanations from superiors when directives they have received are not clear-cut, or are ambiguous. This reluctance may be explained by the fear of the potential humiliation or loss of face to either party involved in such a request for clarification.

Chen (1995, pp. 219-20) comments that "the superiors' preference (for) communicating in general terms, combined with a relatively large power distance, comprises a major source of misunderstanding in Korean companies. It is very important for subordinates to develop the ability to decipher the intentions of the superior from general directives. Good personal relations with superiors tend to help overcome hierarchical barriers to the subordinates' communication with them. Blood relationships as well as (college) and regional ties may further enhance mutual understanding and trust, thereby contributing to (more effective) communication". Chen (1995) adds that "those who share better communication tend to develop an informal management clique within the company".

Chen (1995) comments that South Koreans are reticent about open communication in formal meetings and have difficulty in airing their views, especially opposing ones. Koreans are not culturally encouraged to share information openly with others except within close personal relationships. However ... Koreans are ... good at communication on informal occasions,

especially on a one-to-one basis with a superior. There are many opportunities for informal communication between superiors and subordinates; sophisticated superiors will constantly make such opportunities available". Chen (1995) concludes that "the use of informal occasions or settings for open communication is very important for mutual understanding and trust between superiors and employees".

Samsung: a case example

Cragg (1995, pp. 144-5) comments that:"

founded by the late Lee Byong-Chull during the Japanese era, the Samsung group has now grown into Korea's largest ... chaebol, and ... is the largest non-Japanese conglomerate in Asia. It operates companies with controlling local and important international market shares in semiconductors, consumer electronics, food-processing and pharmaceuticals, as well as shipbuilding, (automobile manufacturing), construction, media, electronic components, chemicals, life insurance, non-life insurance, hospitals, hotels and textiles."

The Samsung group in 1993-1994 comprised 24 companies which employed 180,000 people, and achieved net sales of \$49 billion. The taipan of Samsung is Lee Kun-Hee, the founder's third son.

Cragg (1995, pp. 145-6) notes that in order:"

to strengthen Samsung's competitive advantage, Lee Kun-Hee is engaging in a programme of what he terms corporate "shock therapy". This therapy ... entailed expenditure (during 1993-1994) of more than \$1 billion, or 42 percent of the company's capital budget, on equipment to fine-tune efficiency. Lee has also arranged a campaign of overseas education for his staff, involving visits to retail outlets in the United States, Japan and Germany, where they (may) have to endure twelve-hour lectures followed by the handing out of tapes for regular at-home review. His idea is that management should familiarise themselves thoroughly with their market, and also that they should be exposed to the sort of harsh criticism that he knows will be forthcoming from overseas customers. So committed has Lee been to this commercial revolution that he has vowed that if any of the empire's companies should suffer as a result, the loss will be compensated out of his own pocket. If his policy changes work, on the other hand, he has promised to donate two-thirds of his considerable personal wealth (estimated to be about \$1.6 billion) to a foundation for the good of company employees. He declares that he has staked his honour, his life and his assets on his own ... corporate coup d'etat.

Lee has also introduced into his factories the Japanese practice of stopping production lines when problems occur, and he thinks nothing of having as many as 20 percent of a plant's workers correcting production hitches. He believes that practice makes perfect and that the underscoring of errors makes them less likely to happen again. In a surprise move he has adopted a policy of positive discrimination in the employment of women as managers, and has also limited all workers to a strict eight hours per day, insisting that everyone leaves at 4pm. Internal meetings, he stipulates, must not last for more than one hour, and internal reports must say what they have to say in just one page. All forms of waste are to be purged. He insists that everyone should "think global" and concentrate most heavily on boosting trade with mainland China and Russia. Lee believes that rather than just taking orders, everyone should work together to improve production and find solutions ..."

Samsung Electronics was cited by the Korean Management Association as the country's best run listed company during the year 1995 (Burton, 1996a). However, Samsung are experiencing significant financial problems brought about by recent falls in world semiconductor prices (semiconductors contribute significantly to Samsung's profitability), by their investment

in the Pusan car plant which has yet to meet projected expectations, and by the wider economic crisis of 1997-1998.

Parallels with France

This article contends that developments in the process and practice of South Korean management may in part be suggested on the basis of comparison with the model of French management described by Barsoux and Lawrence (1990, 1991), Hampden-Turner and Trompenaars (1994), (and summarised by Morden, 1996).

Cultural parallels with France

Both South Korea and France appear to be characterised by:

- A relatively high degree of power distance and authoritarianism.
- Strong uncertainty avoidance.
- High context.
- Monochronicity - polychronicity.
- Relatively low trust of others. The Koreans have their clan (the chiban), while the French have their circle (cercle). Each can look out on other people in the outside world from behind these defensive walls.
- Emphasis on hierarchy and discipline, and respect for job status and seniority.
- A continuing belief in the merits of the formalisation, centralisation, and control of their affairs.
- Experience of military conscription (albeit discontinued in France) and reservist duty;
- Strong family owned or controlled business sectors.
- A (sometimes very determined) history of interventionist government policy towards industry and trade.
- A Colbertiste orientation to economic policy. Colbertisme is a mercantilist philosophy in which the interests of the nation state are the driving force of industrial policy, competition policy, and international trade. External (that is, foreign) interests should be manipulated or controlled in the best interests of that nation state. The operation of market forces or the level of returns to stockholders are of subsidiary importance within the wider political context.
- A degree of political and industrial conflict; but at the same time a degree of holism and communitarianism. The enterprise is to a considerable extent viewed as a community, to which managers are responsible. This communitarianism embodies a more humanistic approach to the management of people and resources than the instrumental one characteristic of the US or the Anglo-Saxon world.

Organisational and managerial parallels with France

South Korean management appears to share with its French counterpart:

- A continuing belief in the value of vertical communication, organisational formalisation, hierarchy, and centralisation (despite their generally being unfashionable in Western countries).
- A continuing strong belief in the value of functional and role

specialisation.

- A continuing strong belief in the value of using functional authority in key areas such as strategic planning, finance, and personnel.

- An approach to strategy formulation that is rationalist, deliberate, logically incremental, long termist, and planned down. This centralised and top-down model is currently unfashionable in the USA and the Anglo-Saxon world.

- A continuing belief in rational models of strategic planning and resource allocation (again unfashionable in the West) driven by a powerful and interventionist corporate centre.

- A strong managerialist emphasis. This contrasts with the fashionable emphasis on the delegation of authority and the concepts of "empowerment" in some US and Western companies, who are at the same time layering or "right-sizing" management structures to achieve short term cost reductions, whilst attempting to emphasise leadership qualities among employees in order to make up for the resultant "management deficit".

- An increasingly powerful and well qualified professional management. Given the rapidly growing national and political concern in South Korea about the potential effects of the continuing grip of family ownership and control of the country's key economic activities (and the degree of concentration of power this represents), the development of the country's professional managers into an increasingly powerful elite group is likely to continue. This group is likely to emerge with a status that parallels that of les cadres in France.

- An alumni/network based selection of managerial recruits.

- The beginnings of an acceptance of women into management roles, within a context in which management has traditionally been conceptualised as a masculine activity. It is likely that there will be more of the positive discrimination described in the Samsung sub-section above, especially as the chaebol internationalise their activities.

Future issues

A number of future issues affecting South Korean management are analysed below.

The changing impact of familism

Fukuyama (1995) analyses the relationship between trust, social capital, and the development of organisation and management. He identifies and compares low trust and high trust societies.

Fukuyama (1995) categorises South Korea as traditionally low trust and family/clan orientated. The Confucian value of filial piety is strongly emphasised in Korea; and hence primary loyalties go to one's family or clan, rather than to the state or society in general.

Korea's social structure was similar to that of China. There was a ruler and a mandarin at the top, and families and lineages below; but relatively few intermediate organisations between (and of those, even fewer were not based on some form of kinship).

The primary social structure standing between the family and the state is based on kinship. This takes the form of lineage. Korean lineages (and hence the clans based on them) are large. People claim descent from a common ancestor going back many generations. Lineages can come to include hundreds of thousands of people.

Therefore, as South Korean companies grew in size (under pressure from the state), it was logical to their owners to recruit from lineages, clans, localities, and regions once immediate family options were exhausted.

In this way, a basic family control could be maintained, even if expansion meant that professional management had to be introduced. Such professional managers would at first be recruited from lineage, clan, or region.

Fukuyama (1995, p. 133) comments that the "Korean chaebol started as family businesses; (many) remain family owned and, at the upper reaches, family managed ... giant enterprises like Daewoo ... have long since outstripped the ability of any one family to manage in their entirety, and so they are (now) populated by legions of professional middle managers. But family control remains relatively tight at the top".

He suggests that "behind the imposing exteriors of corporate behemoths like Hyundai ... lie familistic interiors that are slowly ... accommodating themselves to professional management, public ownership, the divorce of management and ownership, and an impersonal, hierarchical corporate form of management".

Fukuyama (1995, p. 144) contends that "the relatively low-trust character of Korean culture does not allow (the) Korean chaebol to exploit the same economies of scale and scope in their network organisations as do the Japanese keiretsu. That is, the chaebol resembles a traditional ... conglomerate more than a keiretsu network: it is burdened with a headquarters staff and a centralised decision-making apparatus for the chaebol as a whole".

The traditional familism of the South Korean company gives rise to a number of issues. These are:

- succession;
- bridges to sociability;
- the weakening impact of familism.

Each is described below.

Succession

Succession may prove to be a problem in South Korea. Founding entrepreneurs have typically wanted to hand on their businesses to their eldest sons (with for example the Daewoo chaebol, as an exception, which adopted a policy of not turning to family members for leadership). Fukuyama (1995, p. 134) notes that as a result "the proper education of a founding entrepreneur's children becomes extremely important, a need that dovetails nicely with Korean Confucianism's strong emphasis on education". He also adds, however, that "the familistic principle of succession leads to substantial problems if the eldest son is incompetent or uninterested in taking over the corporation's leadership".

Bridges to sociability

Several bridges to sociability permit the South Koreans to transcend the limits of the most narrow familism. These are:

- Lineage and clan: large kinship groups have meant that kinship-based recruitment can draw on extensive pools of individuals, thereby mitigating the negative consequences of nepotistic employment.
- Regionalism: whereby recruitment is region-oriented (and especially from the southern Kyongsang provinces, Kyonggi, and the Seoul area).
- The armed forces: under conditions of almost universal male conscription

and reserve duty, South Koreans have a widely diffused experience of the prototypical large, rational, impersonal, hierarchical, non-family organisation. (The discipline of serving within its ranks is said by many to carry over into business life and business culture - an experience with which there are clear parallels in the culture of managers in the UK and USA during the period 1945 up to the 1980s). Military service also allows individual conscripts to build up a network of contacts which they may use in later life.

- University alumni: large corporations recruit heavily from Korea's most prestigious universities, such as Seoul National. There are parallels with French recruitment patterns in this respect.

The weakening impact of familism

Fukuyama (1995) suggests that the impact of familism on South Korean industrial structure has been weakened for instance because of consistent and aggressive government policy since the 1960s; and the desire to imitate/compete with Japan as the key industrial model for the South Koreans. This policy was very much the result of the ambition and drive of President Park Chung Hee (1961-1979). This interventionist policy was based on:

- The deliberate attempt to create large national champions that would be capable of competing directly with the Japanese keiretsu in international markets. Fukuyama (1995, p. 138) notes that "the Park regime intervened in a microeconomic fashion to encourage particular companies and particular investment projects".

- State policies that rewarded or punished private companies through the granting of subsidies, licences, protection from foreign competition; and even the direct reorganisation of companies and the transfer of assets between them.

- State control of the banking and financial sector.

- Regulation of the economy through the control of credit (South Korean companies have until the recent crisis been very highly geared and reliant on loan finance, but do not have the advantage of having their own core bank as is usually the case within the Japanese keiretsu).

- Growing scope has outstripped the capabilities of most founding families to supply the scale and depth of required management competence. Most have had to adopt institutionalised recruitment systems by which competent professionals and graduates can be selected on a relatively impartial basis. Chen (1995, pp. 215-16) comments that "with the passage of time, internally promoted career executives and managers will grow in number and power".

- The global importance of companies such as Samsung means that internal conflicts that arise from family feuds or succession squabbles constitute an unacceptable blow to government policy and national pride.

Hyundai: a case example

The Financial Times (Burton, 1996b) notes that "Mr Chung Mong-Koo, Hyundai's new chairman, is likely to preside over the gradual break-up of the giant family-owned South Korean industrial group established by his father in 1947. That is the way Mr Chung Ju-yung, the Hyundai founder, wants it. In an attempt to avoid a family fight over the Hyundai empire after his death, Mr Chung decided several years ago to divide it among several of his sons and nephews by transferring his stock in most of Hyundai's 45 companies to them".

The Financial Times comments that the result will be the creation of smaller and decentralised groups within Hyundai that amount to a confederation of allied companies. Such a confederation would have similarities to the Japanese *kieretsu* groupings described in an earlier section, above. (Hyundai's restructuring could serve as an example to Korea's other chaebol conglomerates. Government officials have long urged them to abandon their marginal businesses and to concentrate on a limited number of industrial sectors in order to improve their competence and global competitiveness. The tension to which this aspect of industrial policy gives rise is described below.)

Dividing Hyundai into smaller groups is expected to help achieve these goals. Each mini Hyundai will focus on only a few industries, and these units will be less able to support unprofitable activities than they were within the former monolithic company structure.

The formal break-up of Hyundai is however likely to take some time since the group is held together by a complex web of cross-holdings. Family solidarity is also expected to prevent an early break-up of the company.

Such ties may eventually weaken if the government succeeds in attempting to impose limitations on cross-holding arrangements within a grouping, in a political attempt to reduce the economic dominance of the chaebol in South Korea; and more recently in response to the conditions of IMF support for the country's economic recovery.

Professional tensions

There is growing evidence of tension between the practitioners of the traditional style of Korean management described in this article, and professional managers (in particular those who have been educated or worked in western countries and the USA). There is a growing belief on the part of such managers that features of Western style management, such as decentralisation and the wider devolvement of control, are becoming of increasing importance as the South Korean economy matures, government liberalisation proceeds, and Korean companies face the full force of global competition. This belief has been strongly reinforced as a result of the economic crisis faced by South Korea in 1997-1998.

Increasingly influential middle and upper level professional managers will argue for the development of a management style that combines the traditional potential for speed and the decisiveness of South Korean management practice with:

- The performance benefits that derive from the operation of a strong, effective, and wellmotivated cadre of professional managers recruited from the widest possible source;
- Appointment to management posts on the basis of competence and merit.
- Greater transparency and openness of corporate affairs.
- The improved information flow and staff commitment that come from controlled decentralisation and the devolution of operational autonomy.
- The situational relevance and localised understanding needed for decision making in companies with international or global activities.
- The inevitable need to involve senior non-Korean managers in high level decision making as Korean corporations become multinational in scope. Facilitating and developing such involvement may however prove problematic in the medium term in view of the loss of control it may still be perceived by the corporate centre in South Korea to represent.

Industrial relations

Sohal and Ferme (1996) comment that "the current industrial relations climate is still sensitive". For instance, in discussing the Hyundai Motor Company, they state that "in recent times industrial relations ... (had) been disastrous. In 1992 a week-long occupation of the company by the workers ended when 15,000 riot police stormed the factory. This event proved disastrous, breaking down the notion of a family spirit with everyone working together for the common good".

A significant increase in strikes and labour unrest occurred during 1996 and 1997. This unrest was associated with:

- Requests by the OECD and the International Labour Organisation (ILO) for a reduction of statutory curbs on trade union activity.
- The eventual recognition of the Korea Confederation of Trade Unions (KCTU), a new and more militant labour organisation than the Federation of Korean Trade Unions (FKTU), a moderate organisation that was hitherto the only legal representative of the trade union movement in the country. The KCTU has demanded higher pay rises and shorter working hours than those sought by the FKTU. The Financial Times (Burton, 1996c) noted that "Korean industrial workers are already the highest paid on the Asian mainland, with an average monthly wage of Won 1.2m (Pounds 980). The KCTU is also seeking the right for unions to participate in management decisions concerning personnel and plant location...".
- New labour laws, passed in December 1996, which make it easier for companies to dismiss employees. This law reduces job security rights in an attempt to improve labour market flexibility.
- Existing bans on multiple unions in any one workplace, which are not to be lifted until at least the year 2000 (Financial Times, 1996a).

The Financial Times noted (Burton, 1997b) that "the government said the new labour laws were necessary to make the labour market more flexible and enable companies to cut costs by sacking surplus workers, who have been protected by a tradition of lifetime employment in (the) big industrial groups".

The Financial Times also commented (Burton, 1997a) of the new labour law that it had instead been interpreted by some within South Korea to represent "the end of an almost feudalistic arrangement under which workers are strongly loyal to their company in return for job security and generous benefits" in a context within which, outside of the world of work, there is effectively no social security net provided by the state. The industrial relations climate has worsened drastically as a consequence of the mass unemployment that resulted from the economic crisis of 1997-1998. This unemployment includes new structural features, for instance associated with the delayering, downsizing and redundancy of many managerial and administrative staff. This is likely to increase the prevailing level of uncertainty and instability.

Strategic management

Strategic parameters

Strategic parameters for the foreseeable future may be described to include the following.

Strategy and structure. There is increasing uncertainty as to whether organisation structure (and hence the enterprise strategy to which it will give rise) is likely to remain characterised by the continuing family and clan ownership or control of the chaebol groups. Dominant and cross share

holdings, the use of holding companies, family foundations, and family trusts may continue to be used to institutionalise family ownership, but are likely to attract increasing government hostility. The threat of intervention or takeover by foreign companies will increase as government policy on the issue becomes more liberal, and the country responds to pressures from the OECD and IMF. This issue is described in a later section.

Competition strategies. Despite current difficulties, competition strategies are likely to continue to be forward looking, and strongly attacking or proactive in character. Korean industry is likely to remain preoccupied with an adherence to high volume, low cost strategies.

Globalisation. Processes of internationalisation and globalisation are likely on the medium term to continue. Central and Eastern Europe, Russia and China have been added to the EU and NAFTA as critical regional targets. Countries such as Vietnam and India also figure in the calculations of the chaebol; who at the same time can be expected to shoulder much of the financial burden of modernising the obsolete infrastructure and collapsing command economy of neighbouring North Korea.

Issues of globalisation and international structure are dealt with in more detail below.

Capability and competitive advantage

In line with current strategic thinking on the subject, South Korean corporations are attempting to increase the competitive advantage that they can derive ("leverage") from their capability and competence resources. The example of Samsung has already been described above. Cragg (1995) comments that the South Korean companies are now adopting en masse the techniques of operations and quality management "brought in by legions of American management consultants" (p. 137). She suggests that in order that they should become lean, mean corporate machines, many taipans are honing the competitiveness of their companies by introducing total quality management and lean manufacturing programmes; implementing world class manufacturing strategies; re-engineering, "right-sizing", downsizing; or spinning off non-core companies. This trend has been further encouraged by the difficulties experienced by the South Korean economy during 1997-1998.

At the same time, reference has already been made in this article to the South Korean commitment to the education and training processes on which the country's developing entrepreneurial technological expertise and operational competence depend.

Planning style

Approaches to strategy formulation in the chaebol companies are likely to continue to be categorised (Mintzberg, 1989; Mintzberg et al., 1995; Morden, 1996) as being:

- rationalistic (in which there is a formalised and centralised approach to strategy formulation and strategic decision making);
- deliberate (in which an attempt is made to realise strategies exactly as intended);
- logically incremental (in which strategy evolves on a dynamic and step by step basis over time in response to the opportunities and contingencies that emerge to confront the enterprise);
- opportunistic (in which strategic moves and strategic choices are contingent on the business opportunities that become available to the enterprise over time).

Planning style is likely to remain "top-down" for the foreseeable future. Morden (1996) describes a top-down or "planning down" style as one "in which missions, objectives and strategies are determined centrally by top or senior management, the board of directors, the proprietor, the taipan, or the family" (p. 348). The strategic planning process however is informed by input from the functional planning specialists whose role has already been described above. These planning specialists are directly responsible to owners and senior management, and their activities are predicated on a high level of active strategic involvement from the corporate centre.

The planning style of South Korean companies may be categorised as "centralised" under Goold and Campbell's analysis (1987). High levels of corporate influence over strategic planning activities are combined with strong control over strategic and financial management processes. However, the growing scale and scope of the chaebol companies, together with the globalisation described above, may cause some corporations to start to move towards what Goold and Campbell categorise as a "strategic planning" style. In this case the corporate centre continues to play a dominant and determinant role in formulating strategic choice and direction, but increasingly delegates the responsibility for local adaptation, decision-making, implementation and control to unit management under a form of controlled decentralisation. The success of such a change, forced on the chaebol by the globalisation of their activities, will depend on localised management quality and the degree to which the corporate centre is prepared to trust a wider range of professional (and increasingly non-Korean) managers than hitherto. This issue is dealt with below.

World class

Sohal and Ferme (1996) describe the Pohang Iron and Steel Company (POSCO) as "perhaps South Korea's most striking success ... it is ... one of the few big steelmakers to make profits. (Nippon Steel, the world's largest steelmakers, admits that POSCO is also the world's most efficient). POSCO was established in 1968 and is currently 65 percent privately and 35 percent government owned. POSCO produces high-quality steel products at low cost using the most modern facilities and advanced technologies ... POSCO's size has enabled it to make South Korea the world's sixth largest steelmaker ... (POSCO's) management style, employee education, training and welfare and environment protection are second to none. In 1993 POSCO changed its management team in order to create a culture ... in which the creativity and self-reliance of individual employees are fully respected and encouraged. In the new POSCO, customer satisfaction and the employees themselves are management's top priority. POSCO's management philosophy is based on the "three-best" and "three-zero principles". The three-best principle includes best quality, best productivity and best (low) cost. The three-zero includes zero waste, zero defects and zero accidents. The three-best and three-zero objectives are achieved through a highly skilled and trained workforce. Induction and regular on-the-job training is considered vital for employee development. The development of healthy, well-educated and trained people for the next century is one of the key objectives of POSCO management. POSCO's overall philosophy of "resources are limited - creativity is unlimited" demonstrates the company's recognition of people's potential. POSCO does not plan to build additional capacity but to increase productivity through better management practices and people development, and through the application of the results of the advanced research and development it undertakes.

Globalisation

Many South Korean companies have established manufacturing and service operations overseas in order to offset the saturation of domestic markets, to expand their market opportunity, and to avoid the rising cost of doing business at home (in the electronics industry, for instance, South Korean wages have been higher than those in the UK, while land prices may be four times those in the UK).

The Far Eastern Economic Review notes that since 1994 South Korean companies "have been setting up shop at a breakneck pace. From Vietnam to Mexico to Poland, the Koreans are pouring in hundreds of millions of dollars to build a planet-encircling array of factories, regional offices and research and development centres". A spokesman for LG Electronics commented that "through active overseas investment, we hope to achieve globalisation and localisation in order to expand our markets and secure our competitiveness". The scale of this "globalisation" drive is massive. For instance, the stated aim of Daewoo Electronics is to capture 10 percent of the world consumer electronics market by the year 2000, and to generate 60 percent of its output outside South Korea. Samsung's group-wide strategy lays down that by 2000 at least 70 percent of the company's global production of electronic goods should be outside Korea.

South Korean companies have also been involved in a series of takeovers of Western companies. Some examples include:

- Zenith, a US television equipment manufacturer (LG Electronics).
- AST Research, a US manufacturer of personal computers (Samsung).
- Rollei, a German camera company (Samsung).
- A variety of East German companies purchased from the Treuhand (the former East German liquidating agency).

These takeovers have been motivated by the technology acquisition, brand acquisition, and market access opportunities they presented. They are likely to continue on the long term.

The Financial Times (Burton, 1996d) comments of such acquisitions that the chaebol may sometimes underestimate the difficulties involved in successfully turning round and building on the troubled Western companies they have purchased. It suggests that "one weakness in reviving these companies is the lack of global experience among Korean managers. To give Korean corporate management a more cosmopolitan outlook, the chaebol are committed to hiring more foreign executives. But this is not likely to help until the chaebol abandon their autocratic management structures in favour of decentralised decision making".

Nevertheless, the Financial Times adds that the "Koreans work on the explicit assumption that they can succeed where Europeans failed...it is in everyone's interests that they should be right!"

International structure

The developing internationalisation of the scale and scope of the chaebol were originally typically organised on the basis of a "centralised hub" type of structure. In this case, the company pursues its global ambitions from a centralised home base. Key value adding design, R&D, and manufacturing activities are concentrated within the home country, while overseas subsidiaries are (at least initially) established as assembly, sales, distribution, and service operations.

However, the pressures of growing scale and complexity, the international opportunities to achieve low cost production, plus political pressure for instance from the EU and NAFTA to implement regional or continental development and relocate high value adding activities affecting those regions, have caused the chaebol to start a move towards the establishment of federal structures based on the establishment of semi-autonomous local or regional subsidiaries. These subsidiaries operate on the basis of a degree of controlled decentralisation, and are becoming characterised by an increasing level of international co-ordination. Morden (1996) describes

the key features of the co-ordinated federation as:

- its co-ordinated use of R&D, innovation and new product development (NPD) within the federation;
- its use of technology uplift from, and technology transfer across the constituents of the federation;
- its use of brand/image uplift and transfer within the federation (p. 188).

Morden (1996) suggests that "the co-ordinated federation is ... characterised by the development and sharing of experience, technologies, products, brands and identities. This is its main source of competitive advantage" (p. 188).

Decisions on the necessary international forms of organisation and management are beginning to force the owners of the chaebol companies to confront the fundamental issue of the extent to which strategy formulation, decision authority, and operational responsibility should be delegated to the managers of local, regional or continental subsidiaries. Indeed, within a family oriented context, the owners of the chaebol will have eventually to confront the question of whether what is initially defined as an international "subsidiary" must eventually be re-conceptualised by them as a "sister" or "sibling", operating equally amidst peers rather than as children, and increasingly reliant on non-Korean professional managers.

For instance, the Far Eastern Economic Review comments that the South Koreans "aren't just setting up rows of foreign assembly *plants*. A typical offshore investment involves *replicating* a miniature version of a complex, vertically integrated domestic operation ... such as Samsung's \$200 million, fully integrated industrial park in Tijuana, Mexico". It also notes that "Samsung has adopted a regional headquarters system for its international business and is delegating unprecedented responsibility to local managers. Its goal: to decentralise the sprawling organisation and build a global decision-making system for maximum efficiency. From their offices in London, New York, Tokyo, Beijing and Singapore, Samsung managers currently oversee 19 operations in 14 countries; by 1998 they will be responsible for 11 more".

It is likely that at least some of the chaebol will seek to establish distinctly different types of company and management style in each of the world's three trading blocs. Each type is likely to become increasingly adapted to the conditions and cultures of its particular environment, taking advantage of the circumstances it finds there.

Continuing industrial policy tensions

Sohal and Ferme (1996) for instance note that "in early 1994, the Ministry of Trade, Industry and Energy announced that the country's top 30 chaebols would do as the government had asked and concentrate on their core businesses ... the ten largest (were also) told that each would be allowed to operate in three sectors (only) ... the government's reasoning behind this approach is to encourage competition and foster small business activity; to wrest power from the old industrial dynasties and hand over to professional managers ...". This edict has so far met with a mixed reaction from the chaebol; many of whom continue to operate as conglomerates in a number of major sectors (particularly as the ownership or control of a company - irrespective of sector, size or importance - may be seen as a crucial element of family inheritance and continuity; a source of power and political influence; and as a training ground for future family leaders). These industrial policy tensions remain. Recent government statements for instance suggested that Samsung and Hyundai should merge their electronics and automotive interests.

Foreign investment in South Korea

Developing government policy, and the consequences of the economic crisis of 1997-1998, have led to the encouragement of significant foreign investment in the South Korean economy. So, for instance:

- General Motors Corporation has acquired a 50 percent stake in Daewoo Motors.
- *Ford* *Motor* Company are negotiating with Samsung about that company's automotive interests.
- The China Investment Trust of Taiwan is negotiating with Samsung about its electronics interests.

As a result of the inflow of foreign investment into South Korean companies:

- It is likely that company financial dealings (and therefore strategic and management processes) will have to be carried out in an increasingly transparent and accountable manner, in order that external investments are seen to be properly secured; an appropriate level of stewardship demonstrated; and foreign investors reassured.
- There is likely to be an expectation of significantly strengthened and professionalised processes of strategic planning, strategic questioning and justification, and strategic management. The autocratic and unchallenged processes of strategic decision making that hitherto characterised the activities of the Office of the Chairman in at least some chaebol are likely to be unacceptable to foreign investors or partners.
- Foreign investors or partners will wish to see clear evidence of management competence as a benchmark for senior appointments in companies. There is likely to be a rapidly decreasing tolerance (both on the part of foreign investors and the South Korean government) of management appointments made on a traditional familistic basis to meet the exigencies of family control. That is, it may no longer be acceptable to appoint a relative to a senior position just because he is a relative.

The encouragement of foreign investment in South Korean companies is likely to prove a powerful driver of change during the next decade.

Application questions

- 1 From the picture painted by the authors, is business in South Korea much different from the business environment elsewhere? If so, in what ways?
- 2 What is likely to be the lasting effect of the 1997/8 Asian currency collapses, if any?

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3/9/30 (Item 4 from file: 635)
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0040364 87-19077
The Automation Trade-Off
Kurylko, Diana T.
Business Journal of New Jersey (Morganville, NJ, US), V5 N1 s1 p83
PUBL DATE: 870900
JOURNAL CODE: BJNJ DOCUMENT TYPE: Journal article
WORD COUNT: 1,888
DATELINE: NJ, US

TEXT:

In the early 1980s, General Motors Corp. began work on the Corsica and Beretta, two new cars that would change the way the nation's No. 1 automaker manufactured its vehicles. GM would spend upwards of \$1 billion to automate and modernize five factories, including a plant in Linden, that would make the new sedan and coupe. GM's new cars began rolling off the production line last fall and appear to promise higher profits. But in automating the Linden plant, one of two final assembly points for the cars, GM eliminated at least 1,200 jobs in the Garden State.

Ford *Motor* Co., the No. 2 car manufacturer, faced the same grim reality several years ago when it decided to decrease manufacturing costs and improve the quality of its cheapest cars -- the Ford Escort and the Mercury Lynx. Both management and union members at its Edison-based plant were thrown into a new environment of robotics and quality circles. But Ford wasn't ready to make a new car in Edison or to invest millions to retool a plant for cars that were already top sellers. Engineers and union members worked together to install homegrown robotics and improve quality by 40 percent while keeping employment at 1980s' levels because of retirements and attrition.

It hasn't been easy for the U.S. auto industry to adjust to the new competitive world of carmaking. But New Jersey's automobile plants where Chevrolet Corsicas and Berettas and Ford Escorts and Mercury Lynxes are made are examples of how an ailing industry is reawakening to the need of automation. The carmakers were forced to explore ways to cut costs by installing robots, even if it meant jobs -- specifically the 1,200 workers at the GM Linden plant.

There's no doubt among consumer groups and industry followers that both plants had to begin automating. Robots at both plants do welding, tedious tasks and jobs that require consistency such as painting. The results of increased robotics are already showing: Consumer surveys and studies say the quality of both Ford cars made in Edison has improved, while the Chevy Corsica and Beretta wear a fit and finish never before seen on a GM car. The track record of the new Chevys has yet to be a problem.

While jobs are inevitably eliminated because of automation, few companies install machines to reduce labor costs, says John Coburn, associate director of the Computer Aids for Industrial Productivity Center at Rutgers University. "I would wince at a company that told me that its primary interest was to reduce the number of people it employs. That to me is not an acceptable goal," says Coburn who helps companies automate. "But tell me you need to reduce (labor costs) to be competitive with offshore manufacturing, then I can understand if the consequence is less employees."

The United Auto Workers (UAW) has similarly been cognizant of the need to cooperate because there is little doubt the U.S. auto industry, particularly GM, has grown fat. In 1986, GM spent about \$250, or 2.5 percent, more to build a car than either Ford or Chrysler. That's

partially why cutting the cost of producing the Corsica and Beretta was so crucial to the company.

In August 1985, GM closed its Linden plant for one year to retool for production of the Corsica and Beretta, then dubbed the L-cars. The plant and its 5,200 employees had been making the Cadillac Seville and Eldorado and top-line Buicks and Oldsmobile -- nearly 200,000 cars in their last years of production. Workers were put on indefinite layoff and a national agreement between the UAW and GM was negotiated, permitting and anticipated force reduction at the plant, says Mark Leddy, a spokesman for Chevrolet-Pontiac-Canada Group, the GM marketing division that owns the factory.

Layoffs were based on years of service, and when the plant opened last September, only 4,200 employees returned -- 400 managers and 3,800 factory workers. During the year they were idle, all returning employees completed an 80-hour training program in robotics, computerization and attitude adjustment, says Leddy. The classes were essential because all returning employees would face a different plant where more than \$300 million had been invested in expansion and retooling, and GM wanted to be certain all understood the task that lie ahead.

"We had to give them skills for a totally new assignment. But we also opened the books," says Dale Snyder, plant manager.

Union members were given facts and figures comparing GM production costs to those of its American competitors and the imports. Few workers needed further convincing of the need to become more competitive, Snyder says.

However, there was unexpected resistance.

Much of the automation procedures put in place at Linden were based on the New United Motor Manufacturing Inc. (NUMI) joint venture between GM and Toyota in Fremont, Calif., where the Chevrolet Nova is being produced. One of the simplest, but intimidating new procedures copied from that operation was the installation of a button that stops the assembly line. Initially, Linden employees were hesitant about halting production. It just wasn't done in the past, Snyder says. "It's been a fairly long learning process for people to understand."

The Linden plant also no longer has inspectors, another cost-cutting effort. In the past, inspectors followed cars down the assembly line and wrote comments on tickets indicating "if the car was no good or if it needed repairs," Snyder says. "We now hold the production operation operator accountable if it's not right."

Quality is constantly monitored by supervisors and through warranty feedback.

And in many ways, the work being done by employees today is less complicated because the most undesirable jobs, such as welding, are now being done by robots, as are the functions that need precision and consistency. "We replaced people in areas that either were the kind of jobs most of our employees didn't want -- they were noisy and dirty or tedious work -- or where there were safety considerations," Snyder says. "In some cases we put in robots where we needed a high degree of repetition or where it is cost effective."

Vision systems are built into each phase of the body shop process and 400 cameras measure specifications of the cars as they roll by. In the past, it would take several workers and up to eight hours to check a car's dimensions. Now it is monitored almost instantaneously. Painting is also done by robots and the plant uses a high gloss process similar to one used by Mercedes-Benz: The cars get a base coat, one coat of color and a top

coat.

About 800 cars flow off the line each day, and once production is "debugged" as Snyder puts it, production is expected to rise to 967 cars daily -- higher than the 960 Eldorados and Seviles the plant was making in its heyday.

Snyder is certain that employees today are more productive. "I have never seen a work force where they are as tuned in and it stems from competitiveness. We all read of plant closings," he says "We are approaching the productivity level of our overseas competitors and we're using NUMI as many of our targets because NUMI is pretty much a representation of how Toyota operates."

At NUMI, it takes about 25 hours to make a car; Linden has set a target of 28 hours because certain functions simply can't be *replicated*. The *plant* is about 90 percent there, Snyder says.

A new approach called program management was also instituted. Marketing and engineering work more closely together to ensure product quality. That means components are delivered to the plant when they are needed and production schedules can be adjusted almost instantaneously to meet dealer orders. GM saves because a small inventory of parts is required and dealers get the kind of vehicles they ordered more quickly, the company said. It also means Chevrolet can correct flaws without ordering a mass recall because hundreds of thousands of cars have been sold with the defect. Problems can now be spotted within a week, rather than the usual 90 days, with the new dealer warranty control system that was designed by GM's Electronic Data Systems division, says Jim Manduca, the plant's director of quality control.

Information from dealer service operations are computerized and fed back to the plant where changes can be made if a defect is spotted. In one instance, vibrations caused speakers to fall out into the rear compartments of cars being transported. Normally about 50,000 vehicles would have been sold before the problem was recognized. With the new system, only 15,000 had been shipped -- saving GM thousands of dollars because the problem was quickly remedied by an engineering change and adjustment in manufacturing, Manduca says.

Similarly, the glass in the door channels of early 1987 Corsicas was falling out because of a new method used to put glass into the retaining guide. The problem was discovered with the first 1,500 cars and fixed within three days; it would otherwise have taken months to discover.

Unlike the GM plant, Ford's factory hasn't been retooled since 1979, when it closed for a \$65 million-year-long renovation. About 1,400 employees have been producing the Ford Escort and Mercury Lynx since the plant reopened on Sept. 2, 1980. Previously, the plant was making the ill-fated Pinto and prior to that, the Mustang, full-sized Lincoln Mercury and the Ford Falcon.

On the average, the plant makes 55 cars each hour and normally it requires two plant shifts, or 16 hours, to produce one vehicle, says Philip Staley plant manager.

What's different about the robotics in Edison is that all the automation was conceived and designed by engineers and factory workers, says Richard Mosologo, manufacturing engineering manager.

Edison workers began looking at automation because the plant only operates one shift daily. "We faced the necessity of low-cost automation because we are a single shift plant and if we were to automate and went by the conventional methods, we would never be able to justify the savings," Mosologo says.

The plant formed groups of hourly workers and engineers to study various problems and suggest solutions. To date, the group has developed 42 robots -- considerably less than if the plant had gone to a complete changeover where there would then be more than 100 robots. "We took existing tooling and adapted it to robots -- we saved millions of dollars. That's the easiest way to do it," Mosologo says.

Stanley attributes a quality improvement of 40 percent to the self-initiated changes and estimates automation has eliminated 25 repair jobs.

The innovations include a robot that sprays body sealer on the cars from an overhead conveyor, Mosologo says. The unit was installed without a massive shutdown -- the usual practice -- because plant employees designed a transfer device that put the unit on line during production. "By installing it ourselves, we saved about 15 percent of the cost -- about \$100,000 per station," Mosologo says.

To date, six spray stations have been converted, with more to follow. Like GM, the Ford plant automated jobs that no one liked to do, such as welding galvanized metal, and watched quality go up. "The use of robots enhances the quality of our products because the robot will do the same job the same way and requires less surveillance," Mosologo says.

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Motor Skills

While it waits for China's potentially enormous automobile market to explode, Ford pursues a cost-conscious business and IT strategy of modest, rapidly deployable investments.

BY RICHARD PASTORE

Reader ROI

In this feature on Ford in China, readers will learn

► How to align IT strategy with the business plan in an unpredictable and emerging market

► Why incremental IT investments are appropriate for small but growing

HENRY FORD SOLD HIS FIRST CAR IN CHINA, a Model-T, just one year after the last emperor of the Qing dynasty, 6-year-old Pu Yi, was forced to abdicate by the republican reformists of Sun Yatsen. The company failed to capitalize on its early toehold, however. Historical, political and economic events forced the automaker to leave China for 30 years. Though Ford reestablished import sales in 1979, it wasn't until 1993 that Ford Motor (China) Ltd., ensconced in a new five-story building in Beijing, began selling vehicles through its own mainland dealerships. And it started building its first vehicle in China, the 12-passenger Transit van, just last December.

The late start has left Ford with less than 1 percent of the Chinese market where it faces formidable competition from entrenched rivals such as Volkswagen, which has been a China player since the mid-1980s and owns an estimated 55 percent of the market. Ford is also competing with domestic manufacturers like Shanghai Automotive Co. But the future prospects are dramatic. There is currently only 1 automobile for every 100 people in China, compared with 75 vehicles per 100 people in the United States. With a population of 1.2 billion, "They all don't have to be ready to buy a motor vehicle to create a large potential for an industry," says Vaughn Koshkarian, chairman and CEO of Ford Motor (China) and a vice president of Ford Motor Co. in Dearborn, Mich. By 2010, Ford estimates that current total China sales of 1.6 million vehicles per year will climb to 5 or 6 million annually, placing China just behind North America, Europe and Japan as the world's fourth-largest auto market. Koshkarian's goal is to capture 10 percent of that market within 10 years.

This ambitious target, coupled with today's reality of relatively low sales volume, requires a business strategy that balances investment for growth with a disciplined approach to operations that's compatible with current cost constraints. In fact, for many ventures, balancing investment for potential payoff with the limitations of current revenue is the fundamental challenge in China. "It doesn't do any good to spend a billion dollars here and sell only 20,000 units," Koshkarian says. "We try to gauge what demand will be and match that. Keeping costs low, not getting ahead of yourself and establishing a viable business structure that allows [us] to operate in a way that makes sense" are Ford's goals, he says.

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These goals hinge to a large degree on an information technology strategy that is aligned and configured for the unique challenges of a new market. Ford's IT strategy in China is part of its overall long-term business strategy in new growth markets that it calls a "reasoned approach." Ford intends to invest in these markets by creating businesses that are financially sound at the start, robust enough to withstand the variability in a region and able to grow as the market grows. Under this approach, the company follows an IT strategy in China that is cost-conscious, reality-based and rapidly deployable. This may sound obvious, but a dismaying number of Western companies fail to realize that the same business and IT strategies that work great at home do not necessarily translate well to emerging markets and developing nations (see "Emerging Challenges," CIO Section 2, June 15, 1998).



Even if Ford wanted to pour money into China regardless of market realities, it is constrained by the dictates of the government and the limitations of its Chinese venture partners. Since automobile and auto component manufacturing is considered an essential, or "pillar," Chinese industry requiring protection by the central government, Beijing requires foreign automakers to partner with domestic firms to gain access to the market. In addition, the Western firm is often enjoined from owning a majority of the partnership equity. Consequently, most of Ford's partnerships in China are at best a 50-50 split, with the joint venture partners required by law to match each other's capital investments. As a result, Ford's investment levels are constrained by its Chinese automobile and component partners, which have limited means.

Awaiting Growth

Another justification for Ford's reasoned IT strategy is the unpredictability of the Chinese market. Koshkarian admits that Ford hasn't been successful of late in predicting China's automobile market growth, which has been flat for the past two or three years. The flatness, according to Koshkarian, is a result of Beijing's current economic priorities. For now, development of roads is taking a back seat to the need to develop new housing. Other growth-inhibiting factors the government has yet to address are the prohibitive vehicle taxes, which can add 100 percent or more to the purchase price, and the unavailability of consumer financing for auto purchases. Whether and when priorities will shift and constraints will be removed is at best an educated guess, but in the meantime, "IT can help provide discipline to the business," Koshkarian says.

Ford Motor Co. Executive Director and CIO Bernard "Bud" Mathaisel characterizes China's IT strategy as a balanced, scalable approach. "What it does for us is dampen the oscillations of the market," says Mathaisel, who is based in Allen Park, Mich., and is responsible for Ford's worldwide IT systems. "We don't end up saying we're going to do this massive operation in this region of the world, put in this big infrastructure and then three to five years later say, 'Gee, it was a big disappointment and now we've got this high fixed cost.'"

Instead, Ford has deployed a scalable infrastructure that supports relatively modest systems tuned to today's market, with the capability to shoulder more robust applications when and if they are warranted. "Should China get to the point where we have plants that produce a new vehicle every 50-something seconds, then we'll have the infrastructure to be able to support it. But we aren't going to start out that way," Mathaisel says.

Simpler Systems

Ford's China IT infrastructure is based on enterprise resource planning (ERP), a cross-functional system of integrated processes and applications, but not a behemoth package like SAP, which Ford is considering deploying in North America. Instead, Ford has adopted Mfg/Pro, a more modest ERP investment from Carpinteria, Calif.-based QAD Inc. Mfg/Pro, which integrates financial, manufacturing, inventory and sales data, is Ford's standard platform for all new markets. Having such a standard allows Ford to replicate business processes and leverage lessons learned from one country to another.



*"We use a package
that anybody in
China can buy.
The advantage
comes in how fast
we are putting
it in."*

—BIPIN PATEL

For example, the processes of inventory tracking and bills of material are common from market to market and easily replicable. Local languages and practices unique to a country, such as tariffs, customs and government-mandated financial reporting can be automated by extensions to the same standard software.

Ford also gains valuable knowledge each time it deploys the Mfg/Pro package in a country. For instance, experience the company gained deploying the sales, distribution and financial functions of Mfg/Pro in Thailand was used to smooth the deployment in Ford's China joint ventures. Similarly, the knowledge gained from India's and Belarus's rollout of the software's manufacturing logistics functions was valuable in China as well.

Overall, replication pays off in speedy, lower-cost rollouts. Ford boasts that it recently brought Mfg/Pro modules online in just four months in two of its China joint ventures and also in Vietnam and Korea. Try that with a big, costly package.

Tag-Team Approach

That kind of speed would be unlikely without replication, which itself would be impossible without a global new-markets IT team-Ford's structural secret of success in China and other frontiers.

The new-markets team is led from the United States, but the staff is spread around the world. Its multilingual members introduce process reengineering and IT tools, particularly ERP, to Ford's operations around the world. "These people are extremely versatile in that they can talk business process and IT packages. They aren't programmer people at all; they are more process people who know about IT," says Bipin Patel, Asia-Pacific and new-markets manager for Ford's Process Leadership group, whose bailiwick includes China, Taiwan, India, Thailand, Vietnam, Malaysia, Korea, the Philippines, Australia and New Zealand, and Eastern European countries Russia, Turkey and Belarus.

Patel sees the team as a Ford competitive advantage. "We use a package that's commercially available; anybody in China can buy it," he says. "The trick and advantage come in the implementation, in how fast we are putting it in."

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By its nature, the new-markets team is expert in no single country. To address local needs, the ongoing hassles of system support and the necessity to reinforce proper use of technology, Ford relies on locally based IT professionals. In Ford China's five joint venture partnerships and in the home office in Beijing, 40 to 50 native Chinese--most of them fresh-faced twentysomethings--assemble the hardware infrastructure, install the networks and help launch the software. Ford's local efforts are overseen by Systems Director Li Tseng, a Taiwan native and the only expatriate in the IT group, who reports to both Patel and Koshkarian. Tseng and IT managers at the joint ventures tackle the often frustrating tasks of finding and hiring scarce IT professionals, prying new phone lines from the grasp of bureaucratic telecom authorities, connecting the China operations to Ford's global data network and--with help from the new-markets team--persuading end users to learn and adopt new processes and systems. For Tseng and for Ford China, the last is the toughest challenge in executing the IT strategy.

Expect Resistance

"When we implement a system with an existing venture partner, we are usually implementing a new process as well," Tseng says. "When you go in with a new process, you inject a kind of culture shock." ERP, for example, introduces a concept that one's work affects the next person's, and that efficiency depends on integration. That's a splash of scalding tea on Chinese workers' territoriality and predilection to protect their jobs by hoarding data. Also, Chinese employees are accustomed to reporting to a single boss who is mentor, coach and commander. With integrated processes, employees often report to multiple managers across functions.

Tseng advises that it's best to lobby for change from the top down when dealing with resistant managers and staff from the Chinese-partner side of the joint venture. "If upper management shows support, then people will participate more enthusiastically," Tseng says.

Even with such lobbying, resistance to change is still a problem for Ford China, Tseng admits. Users may fail to enter all the data the system requires or may not enter it on a timely basis. They may do their work manually, using the

Under the Hood Ford Motor (China) Ltd.

Headquarters: Beijing
Investment: \$300 million

Sales: \$150 million annually from components (Ford does not disclose vehicle sales by country)

Vehicle Market Share: Less than 1 percent

Current Business

Ventures:

- 11 wholly owned dealerships
- 44 service centers
- 2 parts warehouses
- 5 auto component manufacturing joint ventures
- Equity manufacturing partnership with Jiangling Motors Corp. to build the first Chinese/foreigner-designed vehicle, the Transit van
- Negotiations underway to build passenger cars

Current IT Initiatives:

- Implement and support Mfg/Pro system and integrated ERP processes
- Connect all joint ventures to Ford's global data network

technology redundantly or sporadically. The consequence is that the integration payoff from implementing ERP fails to materialize and, in a vicious circle, undermines Ford's arguments for convincing employees to use the system. "We have to explain to them it's a two-way street. The more you put into the system, the more you get back from the system," says Tseng.

Resistance clearly frustrates Koshkarian, who repeatedly emphasizes the need for discipline. "The reality is the technology has to make sense, and it has to be applied," he says. "You really must have a commitment to do that, to help [the staff] apply IT and make sure the discipline is in place to get real benefit from it."

Though it's a trial to coax users to change their practices and make the most of new systems, Ford should take heart from the fact that in the 84 years between the sale of that first Model-T and the first China Transit, China has gone from a dynastic empire to a closed Communist republic to a cautiously open-door economy aspiring to regional and global leadership. Its people know change. **CIO**

Executive Editor Richard Pastore can be reached at rpastore@cio.com.

Unsafe at Any Speed

Anyone who has survived a hair-raising thrill ride down Beijing streets choked with swerving, kill-or-be-killed taxis, fume-spewing, growling trucks, rickety three-wheeled motor bikes, death-defying bicyclists and the occasional burro-powered cabbage cart would say the last thing this city needs is more vehicles. And Shanghai is even worse.

China forbids foreigners to drive its streets without special permission, and with good reason--even finger-flipping Boston and New York City drivers would be reduced to tears by these mean streets. According to emotionally scarred expatriates, the average driver in China has only three years' experience behind the wheel, and it shows. For instance, don't expect anyone to stop at a red light. At least a half-dozen cars will run the red before anyone gets even a notion of stopping. And vehicles turning right--from any lane--never slow down, let alone stop. There are no walk signals to regulate pedestrians; it's up to you to decide when to wade into the melee.

What does the law have to say about all this? Very little. You are more likely to be pulled over for slowing down for a pedestrian and creating a traffic hazard. Neither the police nor anybody else seems to get upset. There's no road rage, no curse-outs. It's just part of life in a metropolis with 11 million inhabitants.

It's not as though cars are cheap and expendable in China, either. The ubiquitous Volkswagen Santana, a boxy, no-frills sedan, costs 120,000 to 200,000 RMB, or roughly \$US14,500 to \$US24,000. That's about two or three years' salary for one of Beijing's young urban professionals.

Unperturbed, Ford is negotiating a new joint venture agreement to produce passenger cars in China, and General Motors Corp. is building a colossal Buick plant on the fringes of Shanghai.

With more cars coming to join the battle in the streets, the best advice for folks needing to do business in China may be to invest in a good videoconferencing system--and stay home.

--R. Pastore

Government Relations Is Job Two

Quality is still behind the wheel at Ford, but in China, the government is a back-seat driver. Multinational companies wishing to succeed in China must curry favor with the central and local governments, which are still the main customer, regulator and sometimes even the business partner for any foreign-

- Solve Ford's year 2000 problems
- Test and implement Internet system for dealers and service centers to order vehicles and parts and track orders

backed enterprise.

"That's the reality of doing business here, particularly in our industry, which has a high level of control," says Ford Motor (China) Ltd. Chairman and CEO Vaughn Koshkarian. Every day Koshkarian passes by a framed photo of Henry Ford II greeting Deng Xiaoping to reach his office, where Koshkarian has hung his own photos of himself posing with current Chinese leaders like President Jiang Zemin and various vice premiers. Ford sponsors or supports more than a dozen business, education and humanitarian programs intended to benefit China and its automotive industry, not to mention do a little good for Ford.

"Occasionally we will write a check for a good cause, but the majority of our efforts are focused on things that make a difference to our industry and where we can have the best, lasting impact," Koshkarian explains. Most Ford-sponsored programs typically emphasize science and technology, such as the Ford China R&D Fund, which provides Chinese universities grants for automotive-related research, and the Ford China Visiting Engineer/Scientist Program, which annually brings 10 Chinese scientists and engineers abroad to study at Ford labs in the United States and elsewhere.

Ford's C3P Laboratory at Shanghai's prestigious engineering school, Jiaotong University (alma mater of President Jiang, coincidentally), is a state-of-the-art training center for advanced, integrated applications of computer-aided design, manufacturing and engineering (the three "Cs"), and product information management (the "P"). In 1996, Ford donated the \$1 million facility, which has a welcoming alcove where staff and visitors must swap their street shoes for clean sandals. In fact, the lab is more polished and impressive than the peeling college building that houses it. A faculty of six, under the direction of renowned professor Ruan Xue-Yu, train personnel from various Ford China ventures to use these automobile design applications, and the plan is to develop new technology at the lab.

"You really aren't going to be successful in a country like China unless you are there as part of the process of developing technology and training people," says Dennis Schuetzle, director of research and technology for Ford's China operations. In many of Ford's negotiations with state-owned venture partners, the Chinese will ask Ford to give them technology such as the C3P applications, according to Schuetzle. "Our philosophy is, we're not going to give you technology; we're going to bring technology in and work with you to develop the capability further, so we both benefit," he says. "That sells very well."

--R. Pastore

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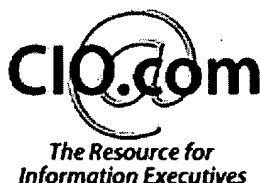
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Please note the attached pdf document contains the same text as this e-mail; some subscribers prefer the pdf format.

Sunday December 15th 2002.

HAPPY CHRISTMAS!

Just in case you are finishing work this Friday, may I wish you a very Happy Christmas and a successful 2003.

Sincerely

Christopher

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CONTENT:

1. World News from Automotive Online. <http://www.automotive-online.com>
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4. Latest UK CBI economic data.
5. Follow the Low Carbon Vehicle Partnership. www.lowcvc.org.uk
6. Fiat announces new Chief Executive.
7. Australian government announces big support package
8. E-comment.

1. WORLD NEWS FROM AUTOMOTIVE-ONLINE. <http://www.automotive-online.com>

Fiat initiative wins international road safety award.

Fiat has received an international award for its work with young people, presented at the annual Prince Michael International Road Safety Awards ceremony held last week at the Savoy Hotel in London. These awards give public recognition to outstanding achievement and innovation in the area of international road safety initiatives.

The company won the award for Fiat e i giovani (Fiat and Young People), a broad-based educational programme aimed at increasing awareness of important issues, including the proper use of mobility, the relationship between technology and the environment and the path of scientific progress. The programmes recognised by this latest award focused primarily on highway education, with the goal of helping to develop answers to social needs, specifically in Italy and Brazil.

Over the 10 years that the Fiat and Young People initiative has been running, Fiat has produced and distributed free of charge educational material to over 13 million students and educators in Brazil and nine million in Italy. The programmes are structured for the different levels of the school system. Projects have expanded to encompass contact with police departments, driving schools and car dealerships, as well as local government and health institutions, libraries and museums. (13/11/2002)

GM may build second model with AvtoVAZ.

GM is reported to be considering building a second vehicle at its joint venture with AO AvtoVAZ in Russia, probably the mid-sized Astra from subsidiary Adam Opel, according to

just-auto.com. GM-AvtoVAZ plans to begin production saloon models of current Astra (code-named T3000) in September 2003, with annual volumes forecast to reach 10,000 in 2004 and 25,000 in 2005-2008. Models would be badged Chevrolet and sold only in Russia. (www.just-auto.com) (13/12/2002)

Mercedes designer jumps to VW

Murat Gunak, Mercedes-Benz's deputy design chief, is to become design director of some of the Volkswagen group brands, commencing April 1 2003. Gunak, 45, succeeds Hartmut Warkuss, 62, and will oversee design activities at the VW, Skoda and Bentley brands. Walter de Silva retains his position as head of design at VW's Audi brand group, which includes Audi, Seat and Lamborghini. Gunak began his career at Mercedes-Benz in the late 1970s. He left in 1983 to take a position at the Ford Design Centre in Cologne. He returned to Mercedes-Benz in 1986, where he was a key contributor to the styling of the A class and SLK roadster, but again left to take the chief designer position at Peugeot in 1994 where he worked on projects such as the 206 supermini.

Bosch's latest ESP system to debut in new Renault Mégane

Renault's new Mégane is the first vehicle to be fitted with Bosch's Generation 8 electronic stability programme (ESP). Bosch says its engineers have enhanced the system's computing performance, allowing for a number of new functions, such as 'Understeering Control Logic' (UCL), developed jointly with Renault, which provides additional driving stability in the case of understeer. The new ESP8 with UCL function can safely decelerate the vehicle whether it is under partial braking, acceleration or cruising says Bosch. Depending on the degree of understeer, this is achieved by reducing engine power and braking all four wheels. (13/12/2002)

Societe Generale to brand Hertz Lease acquisition with ALD Automotive label.

Societe Generale has indicated that it will integrate its Hertz Lease leasing and fleet management acquisition with its ALD Automotive subsidiary, subject to clearance from the European competition authorities, which is likely to allow the acquisition from Ford to be completed in January. The acquisition will strengthen ALD's presence in the Benelux and Scandinavian markets, and extend its coverage right across Western Europe. The combined Hertz and ALD leasing fleets will reach 277,000 units, while vehicles under fleet management will total 115,000. (www.autohaus.de) (13/12/2002)

US proposes boost in light truck CAFE fuel economy standards.

The US Transportation Department's National Highway Traffic Safety Administration has proposed boosting fuel economy standards for minivans, SUVs and pickups from 20.7 mpg now to 22.2 mpg for the 2005-07 models years, reports Reuters. The increases would be spread out over the period, beginning with a 0.3 mpg hike in the first year, followed by successive 0.6 mpg increases. If approved, the change would represent the first increase in fuel standards for light trucks since requirements for all vehicles were imposed 27 years ago in response to the OPEC oil embargo. The standard for passenger cars is 27.5 mpg, which remains unchanged, although regulators said that could be reviewed after the 2007 model year. (Reuters) (13/12/2002)

GM and DaimlerChrysler announce New Venture Gear restructuring.

GM and DaimlerChrysler have announced the signing of definitive agreements that will lead to the completion of the previously-announced ownership restructuring of New Venture Gear (NVG), the power train joint venture formed by the two companies in 1990. The transaction should become effective early in 2003, subject to the necessary approvals. Financial details of the agreement were not announced. Under the agreement, DaimlerChrysler, which previously held a 64% interest in the joint venture, assumes 100% ownership of NVG. NVG remains a separate company and will continue to independently manage its business with GM and other customers. GM will no longer own equity in NVG, but will acquire 100% ownership of the former NVG facility at Muncie, Indiana through a wholly-owned subsidiary, Manual Transmissions of Muncie, LLC (MTM), reporting to GM's Power train organisation. The

Muncie plant manufactures manual transmissions, differentials, gears, and other components. (13/12/2002)

Western European car registrations fell 6.2% in November.

Western European new passenger car registrations for November 2002 totalled 1,061,761 units, showing a year-on-year decline of 6.2% (6% in the 15 EU member states), according to data from the ACEA. November 2002 had two less working days than 2001 in Belgium, France and Germany, and all other countries, with the exception of Italy, had one less working day. Year-to-date figures showed a fall of 3.8% (and 3.7% in the 15 member states).

Among the larger markets, only Italy posted an increase (+1.3%) in November, showing some signs of recovery, while the UK (-6.8%), Germany (-6.9%), France (-9.4%) and Spain (-8.7%) all recorded a drop in sales. Other countries posting an increase in sales were Finland (+10.4%), Denmark (+8.6%), Sweden (+5.2%) and Austria (+0.7%). All the other countries experienced decreases, ranging from -22.5% in Portugal to -1.6% in the Netherlands. (12/12/2002)

South Africa Renault-Imperial JV approved.

The South African Competition Commission has approved the joint venture between Renault and Imperial Car Imports, the importer and distributor of Renault vehicles since 1996, reports CARtoday.com. Renault is said to have acquired 51% of XDSL Trading 218, a wholly-owned subsidiary of Imperial Car Imports, for R100 million. The newly-established company, Renault South Africa, with headquarters in Bruma, Johannesburg, will be headed by Manny de Canha as managing director. The distribution network currently consists of 47 Renault dealerships throughout South Africa and neighbouring states, of which fifteen are owned by the new joint venture company. (12/12/2002)

Siemens forms in-vehicle telematics centre of excellence.

Siemens Datatrak Location and Information Systems and Siemens VDO Trading have announced the creation of a new centre of excellence to meet the demand for integrated in-vehicle telematics solutions. The new organisation will utilise a common technology base and complementary fleet management products and services to deliver new solutions to private individuals and commercial fleet operators in the UK. Siemens VDO Trading deals in areas such as tachographs, in-vehicle navigation and on-board computers, whilst Siemens Datatrak provides Real Time Vehicle Tracking and stolen vehicle tracking systems. The merger will see the flow of real-time location-based information derived from Datatrak enhanced to include fuel consumption, temperature of load, quality of driving and accident data, as well as being fully integrated with VDO Dayton navigation systems. The companies say that Trakbak will benefit from a new focused channel to market, quadrupling the existing number of dealers.

Siemens Datatrak's portfolio of Real Time Vehicle Tracking services will now sit within Siemens VDO Trading's global fleet management services business. Trakbak, Siemens Datatrak's stolen vehicle tracking system, will be made available through Siemens VDO's UK network of 300 dealers. Both Siemens Datatrak and Siemens VDO Trading will continue to operate from their respective premises in Swindon and Birmingham and maintain the same legal status. (10/12/2002)

Ford licences its best practice replication process to US Navy.

Ford has granted a technology licence to the US Navy Aircraft Carrier Team One to adapt Ford's Best Practice Replication Process (BPRP), a knowledge management tool that facilitates collecting, approving and tracking value in replicating highly-leveraged practices throughout an enterprise. Aircraft Carrier Team will learn, apply and integrate Ford's Best Practice Replication processes into their systemic structures and key business processes to "execute modernisations of aircraft carriers." Ford has previously licensed its Best Practice Replication Process to Royal Dutch Shell, Nabisco and Kraft Foods. (09/12/2002)

2. THE WEEK IN BRUSSELS.

1. Commission publishes report on CO2 emissions from passenger cars
2. Deal reached on EU greenhouse gas emissions trading scheme
3. EP and Council agree on sulphur-free petrol and diesel fuels directive
4. Commission releases report on greenhouse gas emissions

1. Commission publishes report on CO2 emissions from passenger cars. The European Commission has published its third annual report on the effectiveness of the EU's strategy of reducing CO2 emissions from new passenger cars. The EU concluded environmental agreements with the European, Japanese and Korean car industry associations (ACEA, JAMA and KAMA), in which the industry committed to achieving a substantial reduction of CO2 emissions from cars. The latest report shows that the car industry will have to make a greater effort if it wants to achieve its commitments. Under the voluntary agreements, ACEA, JAMA and KAMA agreed to cut average CO2 emissions from new cars to 140 g/Km by 2010 at the latest. Both ACEA and JAMA are considered to be on track. KAMA's progress is considered unsatisfactory and KAMA will probably not achieve its intermediate 2004 target. Nevertheless, the Commission expects that all parties will increase CO2 emissions cuts in the forthcoming years. (Source: www.environmentdaily.com Rapid, www.euractive.com) The report can be accessed at:

http://europa.eu.int/eur-lex/en/com/pdf/2002/com2002_0693en01.pdf

2. Deal reached on EU greenhouse gas emissions trading scheme The EU environment ministers have unanimously agreed to set up a market to trade pollution permits for carbon dioxide (CO2) emissions. Once approved by the European Parliament, European industries will be charged for allowances that then can be traded between companies within the EU to achieve the legally binding targets of reducing CO2 emissions. Polluters from the energy, steel, cement, glass, brick making, paper and cardboard industries will be able to buy and sell emissions quotas from the start of 2005. Britain secured an opt-out for industries to be exempt until 2008 if they can show that domestic regulations will achieve the same reduction in emissions. Other concessions were negotiated to lessen the cost to industry, such as lower fines if targets are not met. Penalties in the introductory period, from 2005 to 2007, are €40 per tonne of CO2 beyond the allowed limit, rising to €100 per tonne from the start of 2008. (Source: www.bbc.com , www.environmentdaily.com , www.euractive.com)

3. EP and Council agree on sulphur-free petrol and diesel fuels. The Commission has welcomed the European Parliament and Council agreement on the 2001 proposal on the introduction of sulphur-free fuels. This paves the way for the full market availability of sulphur-free fuels from 1 January 2005 at the latest. The phasing in of these fuels will be completed by 1 January 2009, when these fuels will also be used for non-road mobile vehicles. Sulphur-free fuels enable manufacturers of vehicles and mobile machinery to make full use of the technical potential to reduce the emissions of pollutants like nitrogen oxides and particles and to improve fuel efficiency. Reduction of emissions will contribute to the improvement of air quality and reduce the release of greenhouse gases. (Rapid, DeHavilland)

4. Commission releases report on greenhouse gas emissions The European Commission has published its annual report on greenhouse gas emissions. The report assesses the actual and projected progress of member states and the Community towards fulfilling their greenhouse gas emission commitments under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto protocol. The document shows that the EU is more likely than previously to meet its Kyoto protocol commitments. Nevertheless, existing measures will decrease greenhouse gas emissions by only 4.7 per cent by 2010, which means that without new political measures, the EU will not meet the eight per cent Kyoto target. Emission trends in the transport sector remain a particular concern. All member states, except Finland, show large increases in transport emissions and the emission reductions achieved so far are mainly due to lower emissions in a few member states, notably Germany and the UK, while several Member States are far off track in meeting their targets under the EU burden-sharing. (Source: www.euractive.com , Rapid) The report can be accessed at:

3. THE WEEK IN WESTMINSTER

DfT announces £5.5bn for transport improvements
DfT targets on congestion will not be met - Darling
Government confirms fiscal incentives for cleaner fuels and vehicles
Spellar announces government funding for sustainable transport schemes
£12m stowaway fines overturned by Home Office

DfT announces £5.5bn for transport improvements.

The Department for Transport (DfT) has announced that £5.5 billion will be made available for major national and local transport measures to tackle congestion, improve safety and reliability, and increase the quality of life. Schemes to tackle congestion include plans to widen the M6 between Manchester and Birmingham, and the M1, in the East Midlands, from three to four lanes. There are also plans to increase provision of 'crawler lanes' for HGVs and junction improvements on sections of the M4 and M5 near Bristol. Transport secretary, Alistair Darling MP, said that the 'major package of transport improvements will bring real benefits. From the major motorways which are the nation's arteries to the local bus and cycle routes many of us rely on, we are seeing real progress being made - tackling congestion, improving safety and reliability and increasing the quality of life.' For more see: www.dft.gov.uk.

DfT targets on congestion will not be met - Darling

The transport secretary, Alistair Darling MP, has said that government's efforts to reduce congestion on major roads by five per cent by the end of the decade are failing. Mr Darling said that the best government is likely to achieve is a figure where congestion in 2010 is no worse than it is now. Mr Darling put some of the blame on the buoyant economy and the higher long-term economic growth forecasts which mean consumers are more likely to purchase and then use new cars. Government's aim is now to stem the growth in congestion rather than cutting it. Mr Darling will outline the plans more in depth when he reports next week on progress towards the 10-year transport plan, which was first published in 2000. Campaigners have criticised government's two announcements saying they promote conflicting messages. Nick Schoon, of the Council for the Protection of Rural England said that 'the answer is not to just build more and more roads; the problem needs a more radical approach.' They say that government has given in to the roads lobby.

Government confirms fiscal incentives for cleaner fuels and vehicles

Transport minister, David Jamieson MP, has confirmed that government will continue to use fiscal incentives to encourage demand for both cleaner fuels and vehicles. Speaking in a Westminster Hall parliamentary debate on the Powering Future Vehicles Strategy, Mr Jamieson said that discussions were still ongoing with the Treasury to determine exactly which incentives should be allocated to what fuel or vehicle. Mr Jamieson did add that 'any fiscal incentive must reflect the true emission benefit from those fuels and vehicles.' He said that a decision would be made 'fairly soon'. During the debate, Mr Jamieson also confirmed the launch of the Low Carbon Vehicle Partnership on the 16 January and that the ministerial low carbon group would also be meeting for the first time early next year.

Spellar announces government funding for sustainable transport schemes

Transport minister, John Spellar MP, has announced the winning bids for a share of £600,000 of government funding to promote environmentally friendly travel. Earlier this year, 49 local councils had submitted proposals for encouraging people to leave their cars at home and walk, cycle or use public transport. The 14 successful councils will be awarded match funding to run demonstration projects. Some of the winning ideas include projects to find 2,000 people to commit themselves to undertake one regular environmentally friendly journey a week, marketing plans to target individuals and provide tailored travel information as well as student travel diaries. Mr Spellar said, 'We want to learn from these demonstration projects to improve our understanding of the relative effectiveness of the various travel planning

techniques available and to identify best practice in their application. This in turn should encourage local authorities and others to use personalised travel planning as part of their strategies to reduce congestion.'

£12m stowaway fines overturned by Home Office.

The Home Office has said that it will not now seek to collect the £12 million of unpaid fines imposed on lorry drivers and operators who have inadvertently carried stowaway asylum seekers into the UK. Some £14 million of fines, representing 7,000 stowaways at £2,000 each, were imposed between 2000 and 2001 when the High Court ruled the fines illegal. From December 2001 penalty notices were issued but without obligation to pay. Despite this clause £2m of fines were paid by some drivers. The Home Office, in a letter to the Freight Transport Association, said that following a Court of Appeal judgement 'we have decided that it would not be appropriate to take action to enforce payment of any penalty imposed prior to 8 December 2002 that remains unpaid.' FTA chief executive, Richard Turner, said, 'This is a common sense and inevitable decision by the Home Office. Clearly it would have been totally wrong to have imposed these fines'.

SPECIAL EXTRA UK-ONLY NOTE:

I am a tad embarrassed to have to put this in a global newsletter but many subscribers will know that the UK is struggling to get broadband rolled out at anything like a decent rate. BT, formerly British Telecom, still owns the exchanges and the last mile of wire and is not being exactly dynamic about upgrading smaller exchanges to broadband capability.

At my London office I have a broadband connection which is a standard telephone line which has been upgraded (a bit like a power shower versus a gravity shower!) and which comprises the same terminal box on the wall we all have but with an adaptor on the end, the main part of which goes to my computer and a couple of spurs into my dedicated private fax machine and a second telephone line. There are two reasons why broadband is a delight. Firstly it is so very very fast; secondly you leave it on all the time.

In my study at home where I am right now I have a separate and quite different ISDN line which is very expensive, only about three times as fast as our standard analogue lines and comes from a pole over the road and is therefore a whole extra line with its own number. It is nice in that it is quite quick and has an instant connection facility so there is no hanging around when you dial up. It also enables me to do studio quality radio interviews as it has a junction box with my computer on one spur and a reporter's box of tricks on another spur.

But broadband is faster still and cheaper and far easier to install.

If you live in the UK and want broadband and your local exchange has yet to be upgraded, I wonder if you might join my campaign and register on the BT site as a potential broadband customer? Just visit <http://www.broadband1.bt.com> and register your interest.

Takes less than fifteen seconds. Promise!

Christopher

4. LATEST UK CBI ECONOMIC DATA.

This month's CBI Industrial Trends Survey raised fears that manufacturing is sliding back towards recession. Total orders fell back, having shown signs of moving towards more 'normal' levels in November, while export orders remained depressed. This has caused a build up in stock levels. Firms do not expect output to improve over the coming four months and have scaled back expectations, which contrasts with the more positive outlook reported in the summer.

The depressed state of manufacturing was also reflected in the UK trade data released by the Office of National Statistics. The global trade deficit for goods increased to 3.6 billion

pounds in October, the highest figure since records began in the seventeenth century. Exports to the EU have fallen particularly sharply over the past three months demonstrating the impact that the slowdown there is having on the UK economy.

Producer prices data showed an annual rise in manufacturing output prices of 1.2 per cent in November. However this was mainly due to base effects, arising from reductions in oil prices last year, rather than a recovery in pricing power.

5. KEEP TABS ON THE LOW CARBON VEHICLE PARTNERSHIP.

Low Carbon Vehicle Partnership website now live.

The Low Carbon Vehicle Partnership website, the new advisory and action body that aims to promote the shift to clean, low carbon vehicles and fuels in the UK, is now live. The website at www.lowcvc.org.uk outlines the organisation's aims to shape UK policy through a partnership of industry, government, universities, customers and others. The Low Carbon Vehicle Partnership is due for an official launch on 16 January 2003 and already has a number of vehicle makers, operators and other interested parties signed up as members and wants more members to give the initiative even more weight.

The shift towards a low-carbon economy is becoming a high priority for the UK. Climate change and security of energy supply are pressing issues which the low carbon agenda begins to address. The Low Carbon Vehicle Partnership is a new action and advisory group promoting the shift to clean low carbon vehicles and fuels. LowCVP has a key role to play in taking forward the low carbon agenda in relation to vehicle technology and road transport fuels in the UK.

The website is well worth a visit and I would urge you to bookmark it. There is a foreword by the Prime Minister on the home page.

6. FIAT NAMES NEW CHIEF – ALESSANDRO BARBERIS.

By Frances Kennedy in Rome.

Italian car maker Fiat has named a new chief executive as part of a broad management shake-up aimed at reshaping the fortunes of the struggling firm. The news came after a crucial board meeting in Turin which also examined the wider crisis facing Italy's biggest private sector employer. In a drastic restructuring plan to recoup losses, Fiat has announced 8,000 lay-offs at its Italian plants. Friday's meeting is the result of differences between creditor banks, the company and members of the Agnelli family over how to tackle the crisis.

The meeting was a dramatic showdown between the various forces that determine the future of Fiat, a symbol of Italian industry fighting to survive in the globalised car market. On one side are those that want to try in every way possible to save Fiat Auto, the core business, which has seen its share of the car market plummet with re-structuring and re-investment.

On the other side are those that want to accelerate a sell-off of Fiat to the American company, General Motors, and split up the component parts of the empire to sell them off. However, a last minute compromise, with the intervention of the ailing patriarch, Gianni Agnelli, means there will be no abrupt change of direction, for now at least. The board has named Alessandro Barberis, an engineer who has spent his entire career at Fiat, as the new chief executive.

And Paolo Fresco, the group's chairman who drafted the rescue plan, will remain in place despite pressure for his resignation. Behind the changes, analysts say there has been an attempted coup by the powerful merchant bank, Mediobanca, to wrest control of the Fiat

group. The boardroom battle has created further uncertainty and tension among workers, who have rejected the rescue plan. About 5,000 employees who have been temporarily laid off from factories around Italy are staging protests almost daily. On Friday, more than 10,000 workers in the Piedmont region, home to Fiat's headquarters, marched through the streets as part of a four-hour strike in solidarity with their Fiat colleagues.

7. AUSTRALIAN GOVERNMENT UNVEILS MULTIBILLION DOLLAR ASSISTANCE PROGRAMME.

By PETER O'CONNOR, Associated Press Writer. SOURCE: www.yahoo.com

CANBERRA, Australia - The government will continue to slap 10 percent tariffs on imported cars until 2010 as part of a multibillion dollar package to protect the local auto industry, Prime Minister John Howard announced Friday. Howard said the five-year extension to tariffs and a further 4.2 billion Australian dollars (US\$2.35 billion) in aid would deliver security to the nation's auto industries until "at least to 2015 and beyond."

"It's important because it delivers job security for the thousands of Australian men and women who are employed in the motor manufacturing industry," Howard told reporters.

Successive Australian governments have reduced tariffs on imported cars from 57.5 percent in 1985 to 15 percent currently. They are due to fall to 10 percent by 2005, but until Friday's announcement no plans had been announced for what would happen after that. Australia's four car makers — subsidiaries of U.S. auto giants General Motors Corp. and Ford Motor Co., and Japan's Mitsubishi and Toyota — employ about 50,000 people with another 27,000 working in some 200 firms in the supporting vehicle component sector. Total turnover in 2000 was about A\$17.4 billion (US\$9.7 billion). Annual vehicle production is currently about 350,000.

Until the early 1980s the industry mostly supplied vehicles to the domestic market but since successive governments began cutting back tariff protection, car and component makers have developed overseas markets with exports worth about A\$5 billion in 2001. In addition to the tariff extension, 2.8 billion Australian dollars (US\$1.57 billion) in assistance will be given from 2006-2010 to manufacturers and component makers. Another A\$1.4 billion (US\$784 million) will be provided from 2011 to 2015. The government also will offer grants worth A\$150 million (US\$84 million) for research and development of new technologies.

The industry welcomed the package.

8. E-COMMENT.

Ten days to Christmas; the rain is beating at the windows, it has hardly got light today and the pub over the road looks extremely welcoming.

You have no idea what a battle of wills I undergo sometimes sitting here at my notebook computer whilst I see my mates drifting in and out of the pub. Of course, it is not the lure of a pint of John Smiths. I see my visits as supporting the very fabric of village life and ensuring that for generations to come the vital and intricate contact between neighbours and villagers is preserved and maintained. It is that sort of social interface that makes this country great.

I have to say it has been a harrowing week.

The first thing to go wrong was the realisation that I mishandled the business of buying one of my children a flat in Chester when she went there to university a few years ago. Obviously the way upwardly mobile leading lights do this is by not looking at it themselves but by having an unknown friend of a friend act as an unpaid adviser having first of all set up a blind trust for the financing of the deal.

How stupid am I?

With singular lack of imagination I contacted something called an estate agent. I gave a clear brief of what I was looking for. This company with stacks of local knowledge and for a fixed fee then drew up a short list; I went to look at three places in the space of sixty minutes one wet Saturday when, happily, there was racing at Chester anyway and selected one and in parallel instructed my solicitor to handle the purchase. I thought that was how everybody did it but I now realise there is a much more adventurous way to do it all.

Since at any given moment any one of my children is quite likely to throw up their job and return to university I really must remember this alternative technique next time round.

The other disappointment this week was the announcement by the government that it was going to vaccinate important people against smallpox so the country could continue to function in the event of a terrorist inspired outbreak. Well, despite a hatred of needles, I immediately rolled up my shirt sleeve and stood by my desk awaiting the call. I want to be seen to be doing my duty in the face of adversity and setting an example. I had visions of several police cars with flashing lights arriving at my office and whisking me away to some secret anti-terrorist government building.

Absolutely nothing happened.

All week I have been on red alert. Despite a series of high level meetings throughout the week I made it clear to my secretary that at any minute I was likely to be called away on high level government business and that she had carte blanche to drag me out of any engagement I had. Even during our highly enjoyable and thoroughly festive staff Christmas luncheon I was ready.

Absolutely nothing.

Not wanting to make a fool of myself I tentatively raised the matter at the pub this morning. We have a franchised dealer principal in our midst, several stock brokers, a painter and decorator, three school teachers, a rocket scientist, two lawyers, a judge, someone from the kerb side sector of the retail car business, an electronics manufacturer, a professional gambler, a greyhound dog team owner and one chap whose job is so mysterious none of us know what he does – and on most days I don't think he knows what he does.

From such a high level grouping I just wanted to establish whether I was perhaps the only one to be left out of the vaccination programme. Possibly some administrative slip I thought. Perhaps the computer inadvertently dumped the M surnames I mused.

It transpired that one of the team knew all about it. It further transpired that government advisors had calculated that in the UK there are in fact only seven hundred really important people. The rest of us frankly just do not figure in the disaster recovery plan in any way, shape or form.

Some wag remarked that, to date, there had never been a smallpox case reported for a John Smiths drinker.

For Queen and Country I did the noble thing and ordered another round.

Christopher.

SEARCH NOTES